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Ingénieur Civil des Mines de Paris
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April 2016: Head of the Materials and Structures Simulation group at Centre des Matériaux Mines ParisTech

January 2015: Head, together with Prof. F. Dell'Isola, of the CNRS International Associate Lab LIA Coss&Vita on *Mechanics of generalized continua and their applications to engineering materials and structures*, between Paris F2M (France) and Rome MEMOCS (Italy)

October 2013: First class Research Director at CNRS (DR1)

January 2009: Director of the CNRS Fédération Francilienne de Mécanique des Matériaux, Structures et Procédés (F2M) CNRS FR 2609 (2009-2018)

January 2007: Associate Director of the CNRS Fédération Francilienne de Mécanique des Matériaux, Structures et Procédés, which coordinates research activities of 14 laboratories in mechanics and materials in the Paris region (Director: André Zaoui).

October 2006: Research Director at CNRS

October 2004: Continuum Mechanics Professor at Ecole des Mines de Paris. The course is part of a general e–learning project in Mechanics of Materials and Structures mms2.ensmp.fr (module MMC Paris).

November 2004: Habilitation delivered by the University Pierre et Marie Curie, (jury : D. Leguillon, P. Ponte–Castaneda, P. Suquet, E. Busso, G. Cailletaud, G. Maugin, F. Sidoroff).

June–July 2003 / February 2004 : Stays at the Institut für Theoretische Physik, TU Berlin, and at the Weierstrass Institut für Angewandte Analysis und Stochastik (WIAS), with Prof. W. Dreyer, Berlin (RFA).

October 1996: Chargé de Recherches at CNRS UMR 7633; research program :
"Modelling the behaviour of heterogeneous materials within the framework of the mechanics of generalized continua".

January 1996: Doctor of l'Ecole des Mines de Paris and Doctor Communitatis Europae, in Materials Sciences and Engineering, with distinction (mention Très Honorable et Félicitations du Jury). Jury: A. Bertram, R. de Borst, G. Cailletaud, P. Pilvin, P. Rougée, F. Sidoroff, E. Stein, C. Teodosiu, A. Zaoui; Thesis advisor : G. Cailletaud (Centre des Matériaux). Title of the doctoral thesis :
"Mechanical modelling of heterogeneous deformation of single crystals"

1994-1995: One-year stay at Bundesanstalt für Materialforschung und Prüfung (BAM, Berlin, RFA) within the framework of BRITE-EURAM Project BRE2-CT92-0176 on *Development of Microstructure Based Viscoplastic Models for an Advanced Design of Single Crystal Hot Section Components*

June 1993: Diplôme d'Études Approfondies *"Materials Mechanics"* (post-graduate studies).

June 1992: Diplôme d'Ingénieur Civil des Mines de Paris, (with distinction).

1989-1992: Student at l'Ecole des Mines de Paris (ENSMP), with a major in *"Materials Sciences and Engineering"*.

1986-1989: Preparatory Classes intended for a path of study at the Grandes Ecoles (Mathematics, Physics), in Lyons.

June 1986: Baccalaureat C in Villefranche/Saône

Awards

Huy Duong Bui prize of the Académie des Sciences for the year 2021 (annual prize in mechanics, IT or astrophysics)
www.academie-sciences.fr/fr/Laureats/laureat-2021-du-grand-prix-huy-duong-bui-samuel-forest.html
fr.wikipedia.org/wiki/Prix_Huy_Duong_Bui
www.academie-sciences.fr/fr/Prix-en-mathematiques-physique-mecanique-informatique-et-sciences-de-la-Terre-et-de-l-univers/prix-huy-duong-bui.html
www.academie-sciences.fr/fr/Laureats/laureats-2021-prix-academie-des-sciences.html

Elected Solid Mechanics Euromech Fellow of the European Mechanics Society, 2017
https://euromech.org/fellows/euromech-fellows-solids

CNRS Silver Medal, 2012

Jean Morlet Prize 2008 of the Société Française de Métallurgie et Matériaux (given every two years)

Plumey prize of the Académie des Sciences for the year 2007

Jean Mandel Prize for the year 2001

The study "Mechanical behaviour of nickel foams" by Xavier Badiche, M. Croset, S. Forest and Y. Bienvenu has received the price Jules Garnier of Société Française de Métallurgie for 1999

CNRS Bronze Medal for 1998

Editorships

Associate editor of *International Journal of Solids and Structures* (since 2017)
Member of the editorial board of *International Journal of Solids and Structures* (since 2013-2016)
Member of the editorial board of *Technische Mechanik* (since 2012)
Member of the editorial committee of *Continuum Mechanics and Thermodynamics* (since 2010)
Member of the editorial committee of *Archive of Applied Mechanics* (since 2008)
Associate Editor of *Philosophical Magazine* (since 2007)

List of Publications and Research/Teaching Activities

1 Publications

Journals

[1] M. Lindroos, T. Pinomaa, K. Ammar, A. Laukkanen, N. Provatas, and S. Forest. Dislocation density in cellular rapid solidification using phase field modeling and crystal plasticity. *International Journal of Plasticity*, 148:103139, 2022.

[2] K. Ammar, B. Appolaire, and S. Forest. Splitting of dissolving precipitates during plastic shear: A phase field study. *Comptes Rendus. Physique*, 2021.

[3] V. Phalke, T. Kaiser, J. M. Scherer, and S. Forest. Modeling size effects in microwire torsion: A comparison between a lagrange multiplier-based and a $\mathrm{Curl}\mathrm{F}^{\mathrm{p}}$ gradient crystal plasticity model. *submitted to European Journal of Mechanics A/Solids*, 2021.

[4] J.M. Scherer, J. Besson, S. Forest, J. Hure, and B. Tanguy. A strain gradient plasticity model of porous single crystal ductile fracture. *Journal of the Mechanics and Physics of Solids*, 156:104606, 2021.

[5] H. Farooq, D. Ryckelynck, S. Forest, G. Cailletaud, and A. Marano. A pruning algorithm preserving modeling capabilities for polycrystalline data. *Computational Mechanics*, 68:1407–1419, 2021.

[6] S. D. Schmidt, K. Ammar, W. Dornisch, S. Forest, and R. Müller. Phase field model for the martensitic transformation: comparison of the Voigt/Taylor and Khachaturyan approach. *Continuum Mechanics and Thermodynamics*, 33:2075–2094, 2021.

[7] M. Mazière, S. Forest, and A. Mortensen. Finite element simulation of the Portevin–Le Chatelier effect in highly reinforced metal matrix composites. *Philosophical Magazine*, 101:1471–1489, 2021.

[8] C. Cadet, J. Besson, S. Flouriot, S. Forest, P. Kerfriden, and V. de Rancourt. Ductile fracture of materials with randomly distributed defects. *International Journal of Fracture*, 230:193–223, 2021.

[9] D. Colas, E. Finot, S. Flouriot, S. Forest, M. Mazière, and T. Paris. Experimental and computational approach to fatigue behavior of polycrystalline tantalum. *Metals*, 11:416, 2021.

[10] M. Jebahi and S. Forest. Scalar-based strain gradient plasticity theory to model size-dependent kinematic hardening effects. *Continuum Mechanics and Thermodynamics*, 33:1223–1245, 2021.

[11] B. Staber, S. Forest, M. Al Kotob, M. Mazière, and T. Rose. Loss of ellipticity analysis in non–smooth plasticity. *International Journal of Solids and Structures*, 222–223:111010, 2021.

[12] A. Marano, L. Gélébart, and S. Forest. FFT-based simulations of slip and kink bands formation in 3D polycrystals: influence of strain gradient crystal plasticity. *Journal of the Mechanics and Physics of Solids*, 149:104295, 2021.

[13] S. C. Ren, T. F. Morgeneyer, M. Mazière, S. Forest, and G. Rousselier. Effect of Lüders and Portevin-Le Chatelier localization bands on plasticity and fracture of notched steel specimens studied by DIC and FE simulations. *International Journal of Plasticity*, 136:102880, 2020.

[14] R. Russo, F. A. Girot Mata, and S. Forest. Thermomechanics of cosserat medium: Modeling adiabatic shear bands in metals. *Continuum Mechanics and Thermodynamics*, 2020.

[15] J. M. Scherer, V. Phalke, J. Besson, S. Forest, J. Hure, and B. Tanguy. Lagrange multiplier based vs micromorphic gradient-enhanced rate-(in)dependent crystal plasticity modelling and simulation. *Computer Methods in Applied Mechanics and Engineering*, 372:113426, 2020.

[16] T. Kaiser, S. Forest, and A. Menzel. A finite element implementation of the stress gradient theory. *Meccanica*, 56:1109–1128, 2021.

[17] R. Russo, F.A. Girot Mata, S. Forest, and D. Jacquin. A review on strain gradient plasticity approaches in simulation of manufacturing processes. *J. Manuf. Mater. Process.*, 4:87, 2020.

[18] L. T. Le, K. Ammar, and S. Forest. Efficient simulation of single and poly–crystal plasticity based on the pencil glide mechanism. *Comptes Rendus Mécanique*, 348:846–876, 2020.

[19] A.-E. Viard, J. Dirrenberger, and S. Forest. Propagating material instabilities in planar architectured materials. *International Journal of Solids and Structures*, 202:532–551, 2020.

[20] S. Forest and K. Sab. Finite-deformation second-order micromorphic theory and its relations to strain and stress gradient models. *Mathematics and Mechanics of Solids*, 25:1429–1449, 2020.

[21] A. Ask, S. Forest, B. Appolaire, and K. Ammar. Microstructure evolution in deformed polycrystals predicted by a diffuse interface Cosserat approach. *Advanced Modeling and Simulation in Engineering Sciences*, 7(9), 2020.

[22] C. Findeisen, S. Forest, J. Hohe, and P. Gumbsch. Discrete and continuum modelling of size effects in architectured unstable metamaterials. *Continuum Mechanics and Thermodynamics*, 32:1629–1645, 2020.

[23] L. Lacourt, D. Ryckelynck, S. Forest, V. de Rancourt, and S. Flouriot. Hyper-reduced direct numerical simulation of voids in welded joints via image-based modeling. *International Journal for Numerical Methods in Engineering*, 121:2581–2599, 2020.

[24] M. B. Rubin and S. Forest. Analysis of material instability of a smooth elastic-inelastic transition model. *International Journal of Solids and Structures*, 193–194:39–53, 2020.

[25] M. Ryś, S. Forest, and H. Petryk. A micromorphic crystal plasticity model with the gradient-enhanced incremental hardening law. *International Journal of Plasticity*, 128:102655, 2020.

[26] H. Farooq, G. Cailletaud, S. Forest, and D. Ryckelynck. Crystal plasticity modeling of the cyclic behavior of polycrystalline aggregates under non-symmetric uniaxial loading: Global and local analyses. *International Journal of Plasticity*, 126:102619, 2019.

[27] S. Forest. Continuum thermomechanics of nonlinear micromorphic, strain and stress gradient media. *Philosophical Transactions A*, 378:20190169, 2020.

[28] M. Al Kotob, C. Combescure, M. Mazière, T. Rose, and S. Forest. A general and efficient multi-start algorithm for the detection of loss of ellipticity in elastoplastic structures. *International Journal for Numerical Methods in Engineering*, 121:842–866, 2019.

[29] G. Hütter, K. Sab, and S. Forest. Kinematics and constitutive relations in the stress–gradient theory: Interpretation by homogenization. *International Journal of Solids and Structures*, 193–194:90–97, 2020.

[30] A. Marano, L. Gélébart, and S. Forest. Intragranular localization induced by softening crystal plasticity: Analysis of slip and kink bands localization modes from high resolution FFT-simulations results. *Acta Materialia*, 15:262–275, 2019.

[31] D. Colas, E. Finot, S. Flouriot, S. Forest, M. Mazière, and T. Paris. Local ratcheting phenomena in the cyclic behavior of polycrystalline tantalum. *JOM Journal of the Minerals, Metals & Materials Society*, 71:2586–2599, 2019.

[32] T. Gu, J.-R. Medy, V. Klosek, O. Castelnau, S. Forest, E. Hervé-Luanco, F. Lecouturier-Dupouy, H. Proudhon, P.-O. Renault, L. Thilly, and P. Villechaise. Multiscale modeling of the elasto-plastic behavior of architectured and nanostructured Cu-Nb composite wires and comparison with neutron diffraction experiments. *International Journal of Plasticity*, 122:1–30, 2019.

[33] J. M. Scherer, J. Besson, S. Forest, J. Hure, and B. Tanguy. Strain gradient crystal plasticity with evolving length scale: Application to voided irradiated materials. *European Journal of Mechanics - A/Solids*, 77:103768, 2019.

[34] Z.-P. Wang, L.-H. Poh, Y. Zhu, J. Dirrenberger, and S. Forest. Systematic design of tetra-petals auxetic structures with stiffness constraint. *Materials & Design*, 170:107669, 2019.

[35] S. C. Ren, T. F. Morgeneyer, M. Mazière, S. Forest, and G. Rousselier. Portevin-Le Chatelier effect triggered by complex loading paths in an Al-Cu aluminium alloy. *Philosophical Magazine*, 99:659–678, 2019.

[36] H. Proudhon, N. Guéninchault, S. Forest, and W. Ludwig. Incipient bulk polycrystal plasticity observed by synchrotron in-situ topotomography. *Materials*, 11:1–18, 2018.

[37] A. Ask, S. Forest, B. Appolaire, and K. Ammar. Cosserat crystal plasticity with dislocation–driven grain boundary migration. *Journal of Micromechanics and Molecular Physics*, 3:1840009, 2018.

[38] A. Ask, S. Forest, B. Appolaire, and K. Ammar. A Cosserat–phase field theory of crystal plasticity and grain boundary migration at finite deformation. *Continuum Mechanics and Thermodynamics*, 31:1109–1141, 2019.

[39] A. Ask, S. Forest, B. Appolaire, K. Ammar, and O. U. Salman. A Cosserat crystal plasticity and phase field theory for grain boundary migration. *Journal of the Mechanics and Physics of Solids*, 115:167–194, 2018.

[40] C. Ling, S. Forest, J. Besson, B. Tanguy, and F. Latourte. A reduced micromorphic single crystal plasticity model at finite deformations. Application to strain localization and void growth in ductile metals. *International Journal of Solids and Structures*, 134:43–69, 2018.

[41] F. Ebobisse, P. Neff, and S. Forest. Well-posedness for the microcurl model in both single and polycrystal gradient plasticity. *International Journal of Plasticity*, 107:1–26, 2018.

[42] S. Ren, M. Mazière, S. Forest, T. F. Morgeneyer, and G. Rousselier. A constitutive model accounting for strain ageing effects on work-hardening. Application to a C–Mn steel. *Comptes Rendus Mécanique*, 345:908–921, 2017.

[43] T. Gu, J.-R. Medy, F. Volpi, O. Castelnau, S. Forest, E. Hervé-Luanco, F. Lecouturier, H. Proudhon, P.-O. Renault, and L. Thilly. Multiscale modeling of the anisotropic electrical conductivity of architectured and nanostructured Cu-Nb composite wires and experimental comparison. *Acta Materialia*, 141:131–141, 2017.

[44] A. Pineau and S. Forest. Effects of inclusions on the very high cycle fatigue behaviour of steels. *Fatigue & Fracture of Engineering Materials & Structures*, 40:1694–1707, 2017.

[45] T. Gu, O. Castelnau, S. Forest, E. Hervé-Luanco, F. Lecouturier, H. Proudhon, and L. Thilly. Multiscale modeling of the elastic behavior of architectured and nanostructured Cu–Nb composite wires. *International Journal of Solids and Structures*, 121:148–162, 2017.

[46] W. Liu, K. Saanouni, S. Forest, and P. Hu. The micromorphic approach to generalized heat equations. *Journal of Non-Equilibrium Thermodynamics*, 42:327–357, 2017.

[47] Z. P. Wang, L. H. Poh, J. Dirrenberger, Y. Zhu, and S. Forest. Isogeometric shape optimization of smoothed petal auxetic structures via computational periodic homogenization. *Computer Methods in Applied Mechanics and Engineering*, 323:250–271, 2017.

[48] C. Ling, B. Tanguy, J. Besson, S. Forest, and F. Latourte. Void growth and coalescence in triaxial stress fields in irradiated FCC single crystals. *Journal of Nuclear Materials*, 492:157–170, 2017.

[49] G. Rousselier, T. F. Morgeneyer, S. C. Ren, M. Mazière, and S. Forest. Interaction of the Portevin–Le Chatelier phenomenon with ductile fracture of a thin aluminum ct specimen: experiments and simulations. *International Journal of Fracture*, 206:95–122, 2017.

[50] H. Proudhon, J. Li, W. Ludwig, A. Roos, and S. Forest. Simulation of short fatigue crack propagation in a 3D experimental microstructure. *Advanced Engineering Materials*, pages 1600721–n/a, 2017.

[51] M. Horák, D. Ryckelynck, and S. Forest. Hyper–reduction of generalized continua. *Computational Mechanics*, 59:753–778, 2017.

[52] M. Mazière, C. Luis, A. Marais, S. Forest, and M. Gaspérini. Experimental and numerical analysis of the Lüders phenomenon in simple shear. *International Journal of Solids and Structures*, 106–107:305–314, 2017.

[53] M. Marchenko, M. Mazière, S. Forest, and J. L. Strudel. Crystal plasticity simulation of strain aging phenomena in alpha-titanium at room temperature. *International Journal of Plasticity*, 85:1–33, 2016.

[54] H. Proudhon, J. Li, P. Reischig, N. Gueninchault, S. Forest, and W. Ludwig. Coupling diffraction contrast tomography with the finite element method. *Advanced Engineering Materials*, 18:903–912, 2016.

[55] C. Ling, J. Besson, S. Forest, B. Tanguy, F. Latourte, and E. Bosso. An elastoviscoplastic model for porous single crystals at finite strains and its assessment based on unit cell simulations. *International Journal of Plasticity*, 84:58–87, 2016.

[56] P. Sabnis, S. Forest, and J. Cormier. Microdamage modelling of crack initiation and propagation in fcc single crystals under complex loading conditions. *Computer Methods in Applied Mechanics and Engineering*, 312:468–491, 2016.

[57] S. Forest. Nonlinear regularisation operators as derived from the micromorphic approach to gradient elasticity, viscoplasticity and damage. *Proc. R. Soc. A*, 472:20150755, 2016.

[58] J. F. Ganghoffer, R. Rahouadj, J. Boisse, and S. Forest. Phase field approaches of bone remodeling based on TIP. *Journal of Non-Equilibrium Thermodynamics*, 41:49–75, 2016.

[59] H. J. Chang, N. M. Cordero, C. Déprés, M. Fivel, and S. Forest. Micromorphic crystal plasticity versus discrete dislocation dynamics analysis of multilayer pile-up hardening in a narrow channel. *Archive of Applied Mechanics*, 86:21–38, 2016.

[60] K. Sab, F. Legoll, and S. Forest. Stress gradient elasticity theory: Existence and uniqueness of solution. *Journal of Elasticity*, 123:179–201, 2016.

[61] N.M. Cordero, S. Forest, and E.P. Busso. Second strain gradient elasticity of nano-objects. *Journal of the Mechanics and Physics of Solids*, 97:92–124, 2016.

[62] V. de Rancourt, B. Appolaire, S. Forest, and K. Ammar. Homogenization of viscoplastic constitutive laws within a phase field approach. *Journal of the Mechanics and Physics of Solids*, 88:35–48, 2016.

[63] H. Proudhon, J. Li, F. Wang, A. Roos, V. Chiaruttini, and S. Forest. 3D simulation of short fatigue crack propagation by finite element crystal plasticity and remeshing. *International Journal of Fatigue*, 82:238–246, 2016.

[64] E. Nizery, H. Proudhon, J.-Y. Buffiere, P. Cloetens, T.F. Morgeneyer, and S. Forest. Three-dimensional characterization of fatigue-relevant intermetallic particles in high-strength aluminium alloys using synchrotron X-ray nanotomography. *Philosophical Magazine*, 95:2731–2746, 2015.

[65] S. Forest and M. B. Rubin. A rate-independent crystal plasticity model with a smooth elastic–plastic transition and no slip indeterminacy. *European Journal of Mechanics A/Solids*, 55:278–288, 2016.

[66] A. Villani, E.P. Busso, and S. Forest. Field theory and diffusion creep predictions in polycrystalline aggregates. *Modelling and Simulation in Materials Science and Engineering*, 23:055006 (24pp), 2015.

[67] A. Marais, M. Mazière, S. Forest, A. Parrot, and P. Le Delliou. Influence of static strain aging on the cleavage fracture of a C–Mn steel. *Engineering Fracture Mechanics*, 141:95–110, 2015.

[68] S. Wulfinghoff, S. Forest, and T. Böhlke. Strain gradient plasticity modeling of the cyclic behavior of laminate microstructures. *Journal of the Mechanics and Physics of Solids*, 79:1–20, 2015.

[69] I. Iltchev, V. Marcadon, S. Kruch, and S. Forest. Computational homogenisation of periodic cellular materials: Application to structural modelling. *International Journal of Mechanical Sciences*, 93:240–255, 2015.

[70] S.D. Mesarovic, S. Forest, and J.P. Jaric. Size-dependent energy in crystal plasticity and continuum dislocation models. *Proc. R. Soc. A*, 471:20140868, 2015.

[71] M. Mazière and S. Forest. Strain gradient plasticity modeling and finite element simulation of Lüders band formation and propagation. *Continuum Mechanics and Thermodynamics*, 27:83–104, 2015.

[72] A. Burteau, J.D. Bartout, Y. Bienvenu, and S. Forest. On the creep deformation of nickel foams under compression. *Comptes Rendus Physique*, 15:705–718, 2014.

[73] D. Colas, E. Finot, S. Forest, S. Flouriot, M. Mazière, and T. Paris. Investigation and modelling of the anomalous yield point phenomenon in pure tantalum. *Materials Science and Engineering*, A615:283–295, 2014.

[74] K. Ammar, B. Appolaire, S. Forest, M. Cottura, Y. Le Bouar, and A. Finel. Modelling inheritance of plastic deformation during migration of phase boundaries using a phase field method. *Meccanica*, 49:2699–2717, 2014.

[75] M.G.D. Geers, M. Cottura, B. Appolaire, E.P. Busso, S. Forest, and A. Villani. Coupled glide-climb diffusion-enhanced crystal plasticity. *Journal of the Mechanics and Physics of Solids*, 70:136–153, 2014.

[76] A. Villani, E.P. Busso, K. Ammar, S. Forest, and M.G.D. Geers. A fully coupled diffusional-mechanical formulation: numerical implementation, analytical validation, and effects of plasticity on equilibrium. *Archive of Applied Mechanics*, 84:1647–1664, 2014.

[77] J. Li, H. Proudhon, A. Roos, V. Chiaruttini, and S. Forest. Crystal plasticity finite element simulation of crack growth in single crystals. *Computational Materials Science*, 90:191–197, 2014.

[78] J. Dirrenberger, S. Forest, and D. Jeulin. Towards gigantic RVE sizes for 3D stochastic fibrous networks. *International Journal of Solids and Structures*, 51:359–376, 2014.

[79] A. Bertram and S. Forest. The thermodynamics of gradient elastoplasticity. *Continuum Mechanics and Thermodynamics*, 26:269–286, 2014.

[80] S. Forest and N. Guéninchault. Inspection of free energy functions in gradient crystal plasticity. *Acta Mechanica Sinica*, 29:763–772, 2013.

[81] S. Forest. Questioning size effects as predicted by strain gradient plasticity. *Journal of the Mechanical Behavior of Materials*, 22:101–110, 2013.

[82] N.M. Cordero, S. Forest, and E. P. Busso. Micromorphic modelling of grain size effects in metal polycrystals. *GAMM–Mitteilungen*, 36:182–202, 2013.

[83] P. A. Sabnis, S. Forest, N. K. Arakere, and V.A. Yastrebov. Crystal plasticity analysis of cylindrical indentation on a ni-base single crystal superalloy. *International Journal of Plasticity*, 51:200–213, 2013.

[84] K Madi, S. Gailliègue, M. Boussuge, S. Forest, M. Gaubil, E. Boller, and J.Y. Buffière. Multiscale creep characterization and modeling of a zirconia-rich fused-cast refractory. *Philosophical Magazine*, 93:2701–2728, 2013.

[85] X. Han, J. Besson, S. Forest, B. Tanguy, and S. Bugat. A yield function for single crystals containing voids. *International Journal of Solids and Structures*, 50:2115–2131, 2013.

[86] J. Dirrenberger, S. Forest, and D. Jeulin. Effective elastic properties of auxetic microstructures: anisotropy and structural applications. *International Journal of Mechanics and Materials in Design*, 9:21–33, 2013.

[87] F. Fritzen, S. Forest, D. Kondo, and T. Böhlke. Computational homogenization of porous materials of Green type. *Computational Mechanics*, 52:121–134, 2013.

[88] G. Abrivard, E.P. Busso, S. Forest, and B. Appolaire. Phase field modelling of grain boundary motion driven by curvature and stored energy gradients. part ii: Application to recrystallisation. *Philosophical Magazine*, 92:3643–3664, 2012.

[89] G. Abrivard, E.P. Busso, S. Forest, and B. Appolaire. Phase field modelling of grain boundary motion driven by curvature and stored energy gradients. part i: theory and numerical implementation. *Philosophical Magazine*, 92:3618–3642, 2012.

[90] L. Laiarinandrasana, A. Jean, D. Jeulin, and S. Forest. Modelling the effects of various contents of fillers on the relaxation rate of elastomers. *Materials & Design*, 33:75 – 82, 2012.

[91] D. K. Trinh, R. Jänicke, N. Auffray, S. Diebels, and S. Forest. Evaluation of generalized continuum substitution models for heterogeneous materials. *International Journal of Multiscale Computational Engineering*, 10:527–549, 2012.

[92] A. Marais, M. Mazière, S. Forest, A. Parrot, and P. Le Delliou. Identification of a strain-aging model accounting for Lüders behavior in a C-Mn steel. *Philosophical Magazine*, 28–30:3589–3617, 2012.

[93] A. Burteau, F. NGuyen, J.D. Bartout, S. Forest, Y. Bienvenu, S. Saberi, and D. Naumann. Impact of material processing and deformation on cell morphology and mechanical behavior of polyurethane and nickel foams. *International Journal of Solids and Structures*, 49:2714–2732, 2012.

[94] M. Cottura, Y. Le Bouar, A. Finel, B. Appolaire, K. Ammar, and S. Forest. A phase field model incorporating strain gradient viscoplasticity: application to rafting in Ni-base superalloys. *Journal of the Mechanics and Physics of Solids*, 60:1243–1256, 2012.

[95] H.D. Wang, C. Berdin, M. Mazière, S. Forest, C. Prioul, A. Parrot, and P. Le-Delliou. Experimental and numerical study of dynamic strain ageing and its relation to ductile fracture of a C-Mn steel. *Materials Science and Engineering A*, A 547:19–31, 2012.

[96] J. Dirrenberger, S. Forest, and D. Jeulin. Elastoplasticity of auxetic materials. *Computational Materials Science*, 64:57–61, 2012.

[97] N. M. Cordero, S. Forest, and E. P. Busso. Generalised continuum modelling of grain size effects in polycrystals. *Comptes Rendus Mécanique*, 340:261–274, 2012.

[98] S. Forest and K. Sab. Continuum stress gradient theory. *Mechanics Research Communications*, 40:16–25, 2012.

[99] F. Fritzen, S. Forest, T. Böhlke, D. Kondo, and T. Kanit. Computational homogenization of elasto-plastic porous metals. *International Journal of Plasticity*, 29:102–119, 2012.

[100] P. A. Sabnis, M. Mazière, S. Forest, N. K. Arakere, and F. Ebrahimi. Effect of secondary orientation on notch–tip plasticity in superalloy single crystals. *International Journal of Plasticity*, 28:102–123, 2012.

[101] N. M. Cordero, S. Forest, E. P. Busso, S. Berbenni, and M. Cherkaoui. Grain size effects on plastic strain and dislocation density tensor fields in metal polycrystals. *Computational Materials Science*, 52:7–13, 2012.

[102] H. J. Chang, A. Gaubert, M. Fivel, S. Berbenni, O. Bouaziz, and S. Forest. Analysis of particle induced dislocation structures using three-dimensional dislocation dynamics and strain gradient plasticity. *Computational Materials Science*, 52:33–39, 2012.

[103] O. Aslan, N. M. Cordero, A. Gaubert, and S. Forest. Micromorphic approach to single crystal plasticity and damage. *International Journal of Engineering Science*, 49:1311–1325, 2011.

[104] A. Jean, F. Willot, S. Cantournet, S. Forest, and D. Jeulin. Large scale computations of effective elastic properties of rubber with carbon black fillers. *International Journal of Computational Multiscale Engineering*, 9:271–303, 2011.

[105] O. Aslan, S. Quilici, and S. Forest. Numerical modeling of fatigue crack growth in single crystals based on microdamage theory. *International Journal of Damage Mechanics*, 20:681–705, 2011.

[106] T. Kanit, S. Forest, D. Jeulin, F. N'Guyen, and S. Singleton. Virtual improvement of ice cream properties by computational homogenization of microstructures. *Mechanics Research Communications*, 38:136–140, 2011.

[107] H. Wang, C. Berdin, M. Mazière, S. Forest, C. Prioul, A. Parrot, and P. Le-Delliou. Portevin-Le Chatelier (PLC) instabilities and slant fracture in C-Mn steel round tensile specimens. *Scripta Materialia*, 64:430–433, 2011.

[108] K. Ammar, B. Appolaire, G. Cailletaud, and S. Forest. Phase field modeling of elasto-plastic deformation induced by diffusion controlled growth of a misfitting spherical precipitate. *Philosophical Magazine Letters*, 91:164–172, 2011.

[109] A. Jean, D. Jeulin, S. Forest, S. Cantournet, and F. NGuyen. A multiscale microstructure model of carbon black distribution in rubber. *Journal of Microscopy*, 241:243–260, 2011.

[110] S. Forest and D. K. Trinh. Generalized continua and non–homogeneous boundary conditions in homogenization methods. *ZAMM Zeitschrift fuer Angewandte Mathematik und Mechanik*, 91:90–109, 2011.

[111] S. Forest, N.M. Cordero, and E.P. Busso. First vs. second gradient of strain theory for capillarity effects in an elastic fluid at small length scales. *Computational Materials Science*, 50:1299–1304, 2011.

[112] S. Forest and E. C. Aifantis. Some links between recent gradient thermo-elasto-plasticity theories and the thermomechanics of generalized continua. *International Journal of Solids and Structures*, 47:3367–3376, 2010.

[113] N. M. Cordero, A. Gaubert, S. Forest, E. Busso, F. Gallerneau, and S. Kruch. Size effects in generalised continuum crystal plasticity for two–phase laminates. *Journal of the Mechanics and Physics of Solids*, 58:1963–1994, 2010.

[114] H. Proudhon, V. Vaxelaire, S. Labat, S. Forest, and O. Thomas. Finite element simulations of coherent diffraction in elastoplastic polycrystalline aggregates. *Comptes Rendus Physique*, 11:293–303, 2010.

[115] V. Vaxelaire, H. Proudhon, S. Labat, C. Kirchlechner, J. Keckes, V. Jacques, S. Ravy, S. Forest, and O. Thomas. Methodology for studying strain inhomogeneities in polycrystalline thin films during in situ thermal loading using coherent x-ray diffraction. *New Journal of Physics*, 12:035018, 2010.

[116] K.E. Aifantis, A. Konstantinidis, and S. Forest. Modeling strain localization bands in metal foams. *Journal of Computational and Theoretical Nanoscience*, 7:360–366, 2010.

[117] M. Mazière, J. Besson, S. Forest, B. Tanguy, H. Chalons, and F. Vogel. Numerical aspects in the finite element simulation of the portevin-le chatelier effect. *Computer Methods in Applied Mechanics and Engineering*, 199:734–754, 2010.

[118] K. Ammar, B. Appolaire, G. Cailletaud, and S. Forest. Combining phase field approach and homogenization methods for modelling phase transformation in elastoplastic media. *European Journal of Computational Mechanics*, 18:485–523, 2009.

[119] W. Ludwig, A. King, P. Reischig, M. Herbig, E.M. Lauridsen, S. Schmidt, H. Proudhon, S. Forest, P. Cloetens, S. Rolland du Roscoat, J.Y. Buffière, T.J. Marrow, and H.F. Poulsen. New opportunities for 3D materials science of polycrystalline materials at the micrometre lengthscale by combined use of X–ray diffraction and X–ray imaging. *Materials Science and Engineering A*, 524:69–76, 2009.

[120] V. Ballarin, A. Perlade, X. Lemoine, O. Bouaziz, and S. Forest. Mechanisms and modeling of bake-hardening steels: Part II. complex loading paths. *Metallurgical and Materials Transactions A*, 40:1375–1384, 2009.

[121] V. Ballarin, M. Soler, A. Perlade, X. Lemoine, and S. Forest. Mechanisms and modeling of bake-hardening steels: Part I. uniaxial tension. *Metallurgical and Materials Transactions A*, 40:1367–1374, 2009.

[122] K. Ammar, B. Appolaire, G. Cailletaud, F. Feyel, and S. Forest. Finite element formulation of a phase field model based on the concept of generalized stresses. *Computational Materials Science*, 45:800–805, 2009.

[123] O. Aslan and S. Forest. Crack growth modelling in single crystals based on higher order continua. *Computational Materials Science*, 45:756–761, 2009.

[124] O. Casals and S. Forest. Finite element crystal plasticity analysis of spherical indentation in bulk single crystals and coatings. *Computational Materials Science*, 45:774–782, 2009.

[125] F. Šiška, D. Weygand, S. Forest, and P. Gumbsch. Comparison of mechanical behaviour of thin film simulated by discrete dislocation dynamics and continuum crystal plasticity. *Computational Materials Science*, 45:793–799, 2009.

[126] J. Belotteau, C. Berdin, S. Forest, A. Parrot, and C. Prioul. Mechanical behavior and crack tip plasticity of a strain aging sensitive steel. *Materials Science and Engineering A*, 526:156–165, 2009.

[127] S. Forest. The micromorphic approach for gradient elasticity, viscoplasticity and damage. *ASCE Journal of Engineering Mechanics*, 135:117–131, 2009.

[128] A. Hlilou, I. Ben Naceur, K. Saï, C. Gérard, S. Forest, and G. Cailletaud. Generalization of the polycrystalline β-model: Finite element assessment and application to softening material behavior. *Computational Materials Science*, 45:1104–1112, 2009.

[129] M. Mazière, J. Besson, S. Forest, B. Tanguy, H. Chalons, and F. Vogel. Overspeed burst of elastoviscoplastic rotating disks Part I: Analytical and numerical stability analyses. *European Journal of Mechanics A/Solids*, 28:36–44, 2009.

[130] M. Mazière, J. Besson, S. Forest, B. Tanguy, H. Chalons, and F. Vogel. Overspeed burst of elastoviscoplastic rotating disks Part II: Burst of a superalloy turbine disk. *European Journal of Mechanics A/Solids*, 28:428–432, 2009.

[131] S. Forest. Some links between Cosserat, strain gradient crystal plasticity and the statistical theory of dislocations. *Philosophical Magazine*, 88:3549–3563, 2008.

[132] S. Graff, H. Dierke, S. Forest, H. Neuhäuser, and J.L. Strudel. Finite element simulations of the Portevin–Le Chatelier effect in metal–matrix composites. *Philosophical Magazine*, 88:3389–3414, 2008.

[133] S. Forest and M. Amestoy. Hypertemperature in thermoelastic solids. *Comptes Rendus Mécanique*, 336:347–353, 2008.

[134] M. Mazière, J. Besson, S. Forest, B. Tanguy, H. Chalons, and F. Vogel. Numerical modelling of the Portevin–Le Chatelier effect. *European Journal of Computational Mechanics*, 17:761–772, 2008.

[135] P. Neff and S. Forest. A geometrically exact micromorphic model for elastic metallic foams accounting for affine microstructure. modelling, existence of minimizers, identification of moduli and computational results. *Journal of Elasticity*, 87:239–276, 2007.

[136] A. Bertram and S. Forest. Mechanics based on an objective power functional. *Technische Mechanik*, 27:1–17, 2007.

[137] A. Zeghadi, F. Nguyen, S. Forest, A.-F. Gourgues, and O. Bouaziz. Ensemble averaging stress–strain fields in polycrystalline aggregates with a constrained surface microstructure–Part 1: Anisotropic elastic behaviour. *Philosophical Magazine*, 87:1401–1424, 2007.

[138] A. Zeghadi, S. Forest, A.-F. Gourgues, and O. Bouaziz. Ensemble averaging stress–strain fields in polycrystalline aggregates with a constrained surface microstructure–Part 2: Crystal plasticity. *Philosophical Magazine*, 87:1425–1446, 2007.

[139] F. Šiška, S. Forest, P. Gumbsch, and D. Weygand. Finite element simulations of the cyclic elastoplastic behavior of copper thin films. *Modelling and Simulation in Materials Science and Engineering*, 15:S217–S238, 2007.

[140] H. Dierke, F. Krawehl, S. Graff, S. Forest, J. Šachl, and H. Neuhäuser. Portevin–Le Chatelier effect in AlMg alloys: Influence of obstacles, experiments and modelling. *Computational Materials Science*, 39:106–112, 2007.

[141] K. Madi, S. Forest, M. Boussuge, S. Galliègue, E. Lataste, J.-I. Buffière, D. Bernard, and D. Jeulin. Finite element simulations of the deformation of fused–cast refractories based on X–ray computed tomography. *Computational Materials Science*, 39:224–229, 2007.

[142] F. Šiška, S. Forest, and P. Gumbsch. Simulation of stress–strain heterogeneities in copper thin films: Texture and substrate effects. *Computational Materials Science*, 39:137–141, 2007.

[143] C. Papenfuss and S. Forest. Thermodynamical frameworks for higher grade material theories with internal variables or additional degrees of freedom. *Journal of Non-Equilibrium Thermodynamics*, 31:319–353, 2006.

[144] S. Forest and R. Sievert. Nonlinear microstrain theories. *International Journal of Solids and Structures*, 43:7224–7245, 2006.

[145] N. Marchal, S. Flouriot, S. Forest, and L. Remy. Crack–tip stress–strain fields in single crystal nickel–base superalloys at high temperature under cyclic loading. *Computational Materials Science*, 37:42–50, 2006.

[146] T. Dillard, S. Forest, and P. Ienny. Micromorphic continuum modelling of the deformation and fracture behaviour of nickel foams. *European Journal of Mechanics A/Solids*, 25:526–549, 2006.

[147] T. Kanit, F. Nguyen, S. Forest, D. Jeulin, M. Reed, and S. Singleton. Apparent and effective physical properties of heterogeneous materials: representativity of samples of two materials from food industry. *Computer Methods in Applied Mechanics and Engineering*, 195:3960–3982, 2006.

[148] K. Sai, G. Cailletaud, and S. Forest. Micro–mechanical modeling of the inelastic behavior of directionally solidified materials. *Mechanics of Materials*, 38:203–217, 2006.

[149] S. Forest, J.S. Blazy, Y. Chastel, and F. Moussy. Continuum modelling of strain localization phenomena in metallic foams. *Journal of Materials Science*, 40:5903–5910, 2005.

[150] K. Madi, S. Forest, P. Cordier, and M. Boussuge. Numerical study of creep in two–phase aggregates with a large rheology contrast: Implications for the lower mantle. *Earth and Planetary Science Letters*, 237:223–238, 2005.

[151] T. Dillard, F. Nguyen, E. Maire, S. Forest, Y. Bienvenu, J.-D. Bartout, M. Croset, L. Salvo, R. Dendievel, and P. Cloetens. 3D quantitative image analysis of open–cell nickel foams under tension and compression loading using X–ray microtomography. *Philosophical Magazine*, 85:2147–2175, 2005.

[152] A. H. Benouali, L. Froyen, T. Dillard, S. Forest, and F. Nguyen. Investigation on the influence of cell shape anisotropy on the mechanical performance of closed cell aluminium foams using micro–computed tomography. *Journal of Materials Science*, 40:5801–5811, 2005.

[153] S. Graff, S. Forest, J.-L. Strudel, C. Prioul, P. Pilvin, and J.-L. Béchade. Finite element simulations of dynamic strain ageing effects at V–notches and crack tips. *Scripta Materialia*, 52:1181–1186, 2005.

[154] S. Graff, S. Forest, J.-L. Strudel, C. Prioul, P. Pilvin, and J.-L. Béchade. Strain localization phenomena associated with static and dynamic strain ageing in notched specimens: experiments and finite element simulations. *Materials Science and Engineering A*, 387–389:181–185, 2004.

[155] V. Goussery, Y. Bienvenu, S. Forest, A.-F. Gourgues, C. Colin, and J.-D. Bartout. Grain size effect on the mechanical behavior of open–cell nickel foams. *Advanced Engineering Materials*, 6:432–439, 2004.

[156] J.-S. Blazy, A. Marie-Louise, S. Forest, Y. Chastel, A. Pineau, A. Awade, C. Grolleron, and F. Moussy. Deformation and fracture of aluminium foams under proportional and non proportional multi–axial loading: Statistical analysis and size effect. *International Journal of Mechanical Sciences*, 46:217–244, 2004.

[157] R. Parisot, S. Forest, A. Pineau, F. Nguyen, X. Démonet, and J.-M. Mataigne. Deformation and Damage Mechanisms of Zinc Coatings on Galvanized Steel Sheets, Part II : Damage Modes. *Metallurgical and Materials Transactions*, 35A:813–823, 2004.

[158] R. Parisot, S. Forest, A. Pineau, F. Grillon, X. Démonet, and J.-M. Mataigne. Deformation and Damage Mechanisms of Zinc Coatings on Galvanized Steel Sheets, Part I : Deformation Modes. *Metallurgical and Materials Transactions*, 35A:797–811, 2004.

[159] G. Cailletaud, O. Diard, F. Feyel, and S. Forest. Computational crystal plasticity : From single crystal to homogenized polycrystals. *Technische Mechanik*, 23:130–145, 2003.

[160] S. Flouriot, S. Forest, G. Cailletaud, A. Köster, L. Rémy, B. Burgardt, V. Gros, S. Mosset, and J. Delautre. Strain localization at the crack tip in single crystal CT specimens under monotonous loading : 3D finite element analyses and application to nickel–base superalloys. *International Journal of Fracture*, 124:43–77, 2003.

[161] F. Barbe, S. Forest, S. Quilici, and G. Cailletaud. Numerical study of crystalline plasticity : measurements of the heterogeneities due to grain boundaries under small strains. *La Revue de Métallurgie*, 101:815–823, 2003.

[162] G. Cailletaud, J.-L. Chaboche, S. Forest, and L. Rémy. On the design of single crystal blades. *La Revue de Métallurgie*, 101:165–172, 2003.

[163] T. Kanit, S. Forest, I. Galliet, V. Mounoury, and D. Jeulin. Determination of the size of the representative volume element for random composites: statistical and numerical approach. *International Journal of Solids and Structures*, 40:3647–3679, 2003.

[164] G. Cailletaud, S. Forest, D. Jeulin, F. Feyel, I. Galliet, V. Mounoury, and S. Quilici. Some elements of microstructural mechanics. *Computational Materials Science*, 27:351–374, 2003.

[165] S. Flouriot, S. Forest, and L. Rémy. Strain localization phenomena under cyclic loading : Application to fatigue of single crystals. *Computational Materials Science*, 26:61–70, 2003.

[166] S. Forest and R. Sedláček. Plastic slip distribution in two–phase laminate microstructures: Dislocation–based vs. generalized–continuum approaches. *Philosophical Magazine A*, 83:245–276, 2003.

[167] S. Forest and R. Sievert. Elastoviscoplastic constitutive frameworks for generalized continua. *Acta Mechanica*, 160:71–111, 2003.

[168] S. Forest. Homogenization methods and the mechanics of generalized continua–Part 2. *Theoretical and Applied Mechanics*, 28–29:113–143, 2002.

[169] F. Eberl, S. Forest, T. Wroblewski, G. Cailletaud, and J.-L. Lebrun. Finite element calculations of the lattice rotation field of a tensile loaded nickel base alloy multicrystal and comparison to topographical X-ray diffraction measurements. *Metallurgical and Materials Transactions*, 33A:2825–2833, 2002.

[170] S. Forest, G. Cailletaud, D. Jeulin, F. Feyel, I. Galliet, V. Mounoury, and S. Quilici. Introduction au calcul de microstructures. *Mécanique et Industries*, 3:439–456, 2002.

[171] S. Forest, R. Sievert, and E.C. Aifantis. Strain gradient crystal plasticity: Thermomechanical formulations and applications. *Journal of the Mechanical Behavior of Materials*, 13:219–232, 2002.

[172] R. Sedláček, W. Blum, J. Kratochvil, and S. Forest. Subgrain formation during deformation : physical origin and consequences. *Metallurgical and Materials Transactions*, 33A:319–327, 2002.

[173] S. Forest, F. Pradel, and K. Sab. Asymptotic analysis of heterogeneous Cosserat media. *International Journal of Solids and Structures*, 38:4585–4608, 2001.

[174] F. Barbe, S. Forest, and G. Cailletaud. Intergranular and intragranular behavior of polycrystalline aggregates. Part 2: Results. *International Journal of Plasticity*, 17:537–563, 2001.

[175] S. Forest, P. Boubidi, and R. Sievert. Strain localization patterns at a crack tip in generalized single crystal plasticity. *Scripta Materialia*, 44:953–958, 2001.

[176] R. Parisot, S. Forest, A.-F. Gourgues, A. Pineau, and D. Mareuse. Modeling the mechanical behavior of a multicrystalline zinc coating on a hot-dip galvanized steel sheet. *Computational Materials Science*, 19:189–204, 2001.

[177] T. Hoc and S. Forest. Polycrystal modelling of IF-Ti steel under complex loading path. *International Journal of Plasticity*, 17:65–85, 2001.

[178] R. Sedláček and S. Forest. Non-local plasticity at microscale : A dislocation-based model and a Cosserat model. *physica status solidi (b)*, 221:583–596, 2000.

[179] S. Forest. Strain localization phenomena in generalized single crystal plasticity. *Journal of the Mechanical Behavior of Materials*, 11:45–50, 2000.

[180] X. Badiche, S. Forest, T. Guibert, Y. Bienvenu, J.-D. Bartout, P. Ienny, M. Croset, and H. Bernet. Mechanical properties and non-homogeneous deformation of open-cell nickel foams : application of the mechanics of cellular solids and of porous materials. *Materials Science and Engineering*, A289:276–288, 2000.

[181] S. Forest, F. Barbe, and G. Cailletaud. Cosserat modelling of size effects in the mechanical behaviour of polycrystals and multiphase materials. *International Journal of Solids and Structures*, 37:7105–7126, 2000.

[182] S. Forest. Aufbau und Identifikation von Stoffgleichungen für höhere Kontinua mittels Homogenisierungsmethoden. *Technische Mechanik*, Band 19, Heft 4:297–306, 1999.

[183] S. Forest, R. Dendievel, and G.R. Canova. Estimating the overall properties of heterogeneous Cosserat materials. *Modelling Simul. Mater. Sci. Eng.*, 7:829–840, 1999.

[184] S. Forest and K. Sab. Cosserat overall modeling of heterogeneous materials. *Mechanics Research Communications*, 25(4):449–454, 1998.

[185] S. Forest. Modeling slip, kink and shear banding in classical and generalized single crystal plasticity. *Acta Materialia*, 46(9):3265–3281, 1998.

[186] S. Forest, G. Cailletaud, and R. Sievert. A Cosserat theory for elastoviscoplastic single crystals at finite deformation. *Archives of Mechanics*, 49(4):705–736, 1997.

[187] S. Forest and G. Cailletaud. Strain localization in single crystals: Effect of boundaries and interfaces. *European Journal of Mechanics A/Solids*, 14(5):747–771, 1995.

Invited Conferences

[188] S. Forest. Strain gradient plasticity simulation of strain localization at large deformations. In *Keynote Lecture at ICTAM 2020+1Virtual*, Milan, Italy, August 22–27, 2021.

[189] S. Forest. Something new about isotropic rate-independent plasticity... In *Oberwolfach Workshop on Mechanics of Materials, coordinated by R. Kienzler, D. McDowell, S. Müller and E. Werner*, Mathematisches Forschungsinstitut Oberwolfach, Germany, March 9–13, 2020.

[190] S. Forest. Micromorphic modelling of strain localization and ductile fracture in crystalline solids. In *Fracture in solid mechanics: mathematical and physical aspects, Scientific symposium in honor of Jean-Baptiste Leblond organized by D. Kondo and L. Ponson*, Paris, France, May 27–29, 2019.

[191] S. Forest. Strain gradient and Cosserat crystal plasticity with application to grain boundary migration. In *Plenary lecture at the 41th Solid Mechanics Conference, SolMech 2018, organized by K. Wisniewski*, Warsaw, Poland, August 27–31, 2018.

[192] S. Forest. Regularization operators at finite deformations, application to strain localization in single crystals. In *IUTAM Symposium on Size-Effects in Microstructure and Damage Evolution, organized by C.F. Niordson and K.L. Nielsen*, Lyngby, Denmark, May 27–June 1, 2018.

[193] S. Forest. Cosserat modelling of grain boundary migration coupled with crystal plasticity. In *Schöntal Symposium on Dislocation–Based Plasticity, organized by P. Gumbsch and K. Schulz*, Schöntal, Germany, February 26–March 1, 2018.

[194] S. Forest. Combining large scale simulations and experiments for the understanding of plasticity and cracking phenomena in metal polycrystals. In *Plenary lecture at ECCOMAS Thematic Conference on Computational modeling of Complex Materials across the Scales, CMCS 2017, organized by M. Geers, P. Steinmann and J. Yvonnet*, Paris, France, November 7–9, 2017.

[195] S. Forest. The micromorphic approach to gradient plasticity and damage. In *Plenary lecture at XIV International Conference on Computational Plasticity. COMPLAS 2017, organized by E. Oñate, D.R.J. Owen, D. Peric and M. Chiumenti*, Barcelona, Spain, September 5–7, 2017.

[196] S. Forest. Crystal plasticity and cracking of polycrystalline aggregates 4D experiments and computations. In *Plenary lecture at the Clausthal-Göttingen International Workshop on Simulation Science*, Göttingen, Germany, April 27–28, 2017.

[197] S. Forest. Microdamage modelling of crack initiation and propagation in polycrystals and comparison with 3DXRD/DCT synchrotron experiments. In *International Workshop on Quantitative Mechanistic Nucleation and Microstructure-sensitive Growth of Fatigue Cracks, organized by F. Dunne*, Pembroke College, Oxford, UK, April 3–4, 2017.

[198] S. Forest. The micromorphic approach to gradient crystal plasticity and damage. In *Sectional Lecture at ICTAM 2016*, Montréal, Canada, August 21–26, 2016.

[199] S. Forest. Non–quadratic potentials in gradient plasticity and phase field models. In *15th GAMM-seminar on microstructures*, IHP, Paris, France, January 22–23, 2016.

[200] S. Forest. Cosserat, micromorphic vs. strain gradient crystal plasticity, *plenary lecture*. In *International Workshop on Computational Mechanics of Materials, IWCMM25*, Bochum, Germany, October 1–2, 2015.

[201] S. Forest. Milieux continus généralisés pour la plasticité et la rupture, *semi–plenary lecture*. In *Congrès Français de Mécanique, CFM 2015*, Lyon, France, August 24–28, 2015.

[202] V. de Rancourt, B. Appolaire, and S. Forest. Homogenization schemes and phase field approach of diffusive phase transformation accompanied by viscoplastic deformation processes. In *Multi-scale computational methods for bridging scales in materials and structures, Euromech Colloquium 559*, Eindhoven, The Netherlands, February 23–25, 2015.

[203] S. Forest. Modelling fatigue crack initiation and propagation in single crystals, *Keynote lecture* in the Minisymposium on Multiscale and Multiphysics Modelling of Complex Materials, organised by P. Trovalusci, R. de Borst and B. Schrefler. In *11th World Congress on Computational Mechanics WCCM XI*, Barcelona, Spain, July 20–25, 2014.

[204] S. Forest. Mechanics of generalized continua for the plasticity and fracture of engineering materials, *plenary lecture*. In *8th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2014, organized by H. Altenbach and A. Oechsner*, Paris, France, July 1–3, 2014.

[205] S. Forest. Application of strain gradient crystal plasticity to the cyclic behaviour of laminate microstructures. In *International Symposium on Length scales in solid mechanics: Mathematical and physical aspects, organized by P. Le Tallec, J.J. Marigo and N. Triantafyllidis*, Institut Henri Poincaré, Paris, France, June 19–20, 2014.

[206] S. Forest. Micromorphic crystal plasticity: Application to cyclic plasticity and strain localization in single and polycrystals. In *Schöntal Symposium on Dislocation–Based Plasticity, organized by P. Gumbsch and S. Sandfeld*, Schöntal, Germany, February 22–28, 2014.

[207] S. Forest. Continuum modelling of twinning, kinking and cracking in single crystals. In *Symposium JJ on Materials Fundamentals of Fatigue and Fracture at MRS Fall Meeting, organized by A. Benzerga, E.P. Busso, T. Pardoen and D.L. McDowell*, Boston, USA, December 1–6, 2013.

[208] S. Forest, K. Ammar, and B. Appolaire. Phase field approach and strain gradient plasticity. In *Professor Dr. Hans Georg und Liselotte Hahn Workshop on Phase Field Modeling, organized by R. Müller and B. Markert*, Freudenstadt, Germany, February 20–22, 2013.

[209] S. Forest, K. Ammar, and B. Appolaire. A phase field model incorporating strain gradient plasticity. In *Keynote lecture at ECCOMAS 2012, 6th European Congress of Computational Methods in Applied Sciences and Engineering, organized by J. Eberhardsteiner, H.J. Böhm, F.G. Rammerstorfer*, Vienna, Austria, September 10–14, 2012.

[210] S. Forest, N. Cordero, and E. Busso. Size-dependent homogenization of polycrystals. In *Keynote lecture at ESMC 2012, 8th European Solid Mechanics Conference, organized by G.A. Holzapfel and R.W. Ogden*, Graz, Austria, Juli 9–13, 2012.

[211] S. Forest. Generalized continuum crystal plasticity. In *Oberwolfach Workshop on Mechanics of Materials, coordinated by R. Kienzler, D. McDowell, S. Müller and E. Werner*, Mathematisches Forschungsinstitut Oberwolfach, Germany, March 18–24, 2012.

[212] D. K. Trinh and S. Forest. Generalized continuum overall modelling of periodic composite structures. *Vietnam Journal of Mechanics*, 33:245–258, 2011.

[213] S. Forest. Micromorphic approach to gradient plasticity with application to Lüders behaviour in steels. In *Trends in Thermodynamics and Materials Theory, A Symposium in Honor of the 75th Birthday and Scientific Life of Prof. Ingo Müller*, Berlin, Germany, December 15–17, 2011.

[214] S. Forest. Conférence invitée sur le calcul de structures en présence de vieillissement dynamique dans les alliages métalliques. In *Congrès Français de Mécanique CFM 2011*, Besançon, France, August 28–September 2, 2011.

[215] N. M. Cordero, S. Forest, and E. Busso. Second strain gradient modeling of surface effects in nano–objects. In *IUTAM Symposium on Linking Scales in Computations: from Microstructure to Macro-scale Properties, ed. byi O. Cazacu and J. Rogaki*, University of Florida/REEF, USA, Pensacola, May 17–19, 2011.

[216] A. Burteau and S. Forest. Nickel base superalloy foams for particle filtration: From the morphology to the mechanical properties. In *IUTAM Symposium on Mechanics of Liquid and Solid Foams, ed. by S. Kyriakides and A.M. Kraynik*, The University of Texas at Austin, USA, May 8-13, 2011.

[217] S. Forest. Size effects in generalized continuum single crystal plastity. In *Workshp "Matériaux hétérogènes et composites" en l'honneur d'A. Zaoui*, Briançon, France, September 2–3 2010.

[218] S. Forest and O. Aslan. Microdamage modelling of crack propagation in single crystals. In *Multiscale effects in fatigue of metals, Euromech Colloquium 505*, Paris, France, July 7–9 2010.

[219] S. Forest. Formulations of strain gradient plasticity. In *First German-French-Russian Symposium on generalized continua*, Leucorea, Lutherstadt Wittenberg, Germany, August 9–11 2010.

[220] S. Forest. Plenary lecture on the mechanics of generalized continua and heterogeneous materials. In *GAMM 2010, 81th Annual Meeting of the International Association of Applied Mathematics and Mechanics*, Karlsruhe, Germany, 22–26 March 2010.

[221] S. Forest. Continuum mechanical modelling of micro- and nano–structures. In *ECCOMAS thematic conference From the Atom to the Part: Models and computational methods*, Nantes, France, 21–23 octobre 2009.

[222] S. Forest. Plasticité des polycristaux métalliques et milieux continus généralisés. In *Congrès Français de Mécanique*, Marseille, France, 24–28 August 2009.

[223] S. Forest. Micromorphic vs. phase field approach of thermomechanical behaviour of materials. In E.C. Aifantis, editor, *Second Wold Symposium on Multiscale Material Mechanics and Engineering Sciences*, Aristotle University, Thessaloniki, Greece, May 21-22 2009.

[224] A. Burteau and S. Forest. The micromorphic approach to plasticity and fracture. application to metallic foams. In R. de Borst and The German-Dutch Research Unit E. Ramm, editors,

International Colloquium on Multiscale Methods in Computational Mechanics, Rolduc, The Nertherlands, March 11–13 2009.

[225] S. Forest. Generalized continuum approaches to single crystal plasticity. In *Plasticity'09*, St. Thomas, US Virgin Islands, January 3–8 2009.

[226] S. Forest. Cyclic behaviour of polycrystalline thin films: strain heterogeneities and size effects. In *IUTAM Symposium Multiscale plasticity of crystalline materials*, TU/e, Eindhoven, The Netherlands, November 5–9 2007.

[227] M. Duchamp, J.D. Bartout, S. Forest, Y. Bienvenu, G. Walther, S. Saberi, and A. Boehm. Mechanical properties of nickel–based superalloy foams for Diesel particle filter applications. In H. Zhao and N.A. Fleck, editors, *IUTAM Symposium on Mechanical properties of cellular materials*, pages 51–67, Paris, France, September 17–21 2007. IUTAM Series 12, Springer.

[228] S. Forest. Cosserat continuum modeling of size effects in crystal plasticity. In *IUTAM Symposium on Plasticity at the Micron Scale*, Copenhagen, Denmark, May 21–25 2006.

[229] S. Forest. Calcul de microstructures à morphologies complexes : des crèmes glacées aux réfractaires électrofondus. In *Colloque national Mécamat, Approches multi–échelles en mécanique des matériaux*, Aussois, France, January 23–27 2006.

[230] S. Forest. Continuum modeling of relative and absolute size effects in crystal plasticity. In *IUTAM Symposium on Mechanical Behavior and Micro–Mechanics of Nanostructured Materials*, Beijing, China, June 27–30 2005.

[231] S. Forest. Micromorphic continua and homogenization methods. In *Size-dependent Mechanics of Materials, Euromech Colloquium 463*, Groningen, The Netherlands, June 13–15 2005.

[232] S. Forest. Homogénéisation et calcul de microstructures : notion de Volume Elémentaire Représentatif et effet de taille de grain dans les polycristaux métalliques. In *Congrès Français de Mécanique*, Nice, France, 1–5 September 2003.

[233] S. Forest and G. Cailletaud. Large scale 3D computations of microstructures : numerical tools and applications. In K. Sobczyk, editor, *34th Solid Mechanics Conference*, Zakopane, Poland, 2–7 September 2002.

[234] S. Forest. Analyse critique de quelques modèles à gradients en plasticité cristalline. In J.-Y. Buffière, E. Maire, and R. Estévez, editors, *Plasticité 2002*, Francheville, Lyon, 15–17 Mai 2002.

[235] S. Forest and M. Fivel. Modèles discrets et continus de la plasticité des métaux : du monocristal au polycristal. In J. Ayache and J.-P. Morniroli, editors, *Microscopie des défauts cristallins, Ecole thématique CNRS*, pages 457–466, Oléron, 2001. Société Française de Microscopie.

[236] S. Forest. Continuum modelling of deformation mechanisms at a crack tip in single crystals. In A.-M. Habraken, editor, *4th International ESAFORM Conference on Material Forming*, pages 487–490, Liège, 23-25 April 2001. Université de Liège.

[237] S. Forest. Cosserat modeling of size effects in polycrystals. In J.L. Bassani L.P. Kubin, R.L.P. Selinger and K. Cho, editors, *Multiscale Materials Modeling-2000*, volume 653, pages Z8.2.1–Z8.2.12, Boston, 2001. Material Research Society.

[238] S. Forest. Strain localization phenomena as elementary deformation mechanism of different materials classes. In *20th International Congress of Theoretical and Applied Mechanics, ICTAM2000*, Chicago, 27 August–2 September 2000.

[239] S. Forest. Modelling size effects in crystals. In *Fourth International Congress on Industrial and Applied Mathematics, Mini-symposium on Phase field models and prediction of micro-morphological changes in alloys*, Edinburgh, july 1999.

[240] J.-M. Cardona, S. Forest, and R. Sievert. Towards a theory of second grade thermoelasticity. *Extracta Mathematicae*, 14(2):127–140, 1999.

[241] S. Forest and P. Pilvin. Modelling finite deformation of polycrystals using local objective frames. *Z. Angew. Math. Mech.*, 79:S199–S202, 1999.

[242] S. Forest and K. Sab. Overall modelling of periodic heterogeneous Cosserat media. In E. Inan and Z. Markov, editors, *Ninth International Symposium on Continuum Models and Discrete Systems, CMDS9*, pages 445–453. World Scientific Publishing Company, 1998.

[243] S. Forest. Mechanics of generalized continua : Construction by homogenization. *Journal de Physique IV*, 8:Pr4–39–48, 1998.

[244] S. Forest. Homogenization methods and the mechanics of generalized continua. In G. Maugin, editor, *International Seminar on Geometry, Continuum and Microstructure*, pages 35–48. Travaux en Cours No. 60, Hermann, 1999.

[245] S. Forest. Strain localization phenomena in generalized crystal plasticity. In *Second Euroconference and International Symposium on Material Instabiblities in Deformation and Fracture, Journal of the Mechanical Behavior of Materials*, volume 11, pages 45–50, organized by E.C. Aifantis, Aristotle Technical University, Thessaloniki, Greece, 1997.

Conferences with Proceedings and Referees

[246] S.-C. Ren, G. Rousselier, T.F. Morgeneyer, M. Mazière, and S. Forest. Numerical investigation of dynamic strain ageing and slant ductile fracture in a notched specimen and comparison with synchrotron tomography 3D-DVC. *Procedia Structural Integrity*, 2:3385–3392, 2016. 21st European Conference on Fracture, ECF21, 20-24 June 2016, Catania, Italy.

[247] W. Liu, K. Saanouni, C. Labergère, H. Badreddine, S. Forest, and P. Hu. Nonlocal constitutive equations of elasto-visco-plasticity coupled with damage and temperature. *MATEC Web Conf.*, 80:01002, 2016. NUMIFORM 2016: The 12th International Conference on Numerical Methods in Industrial Forming Processes.

[248] Nizery, Erembert, Buffiere, Jean-Yves, Proudhon, Henry, Daniélou, Armelle, and Forest, Samuel. Influence of intermetallic particles on short fatigue crack initiation in AA2050-T8 and AA7050-T7451. *MATEC Web of Conferences*, 12:07003, 2014.

[249] K. Madi, G. Aufort, A. Gasser, and S. Forest. Prediction of the Elastic Modulus of the Trabecular Bone Based on X-Ray Computed Tomography. In Lim, CT and Goh, JCH, editor, *6th World Congress of Biomechanics (WCB 2010), PTS 1-3*, volume 31 of *IFMBE Proceedings*, pages 800–803, 2010. 6th World Congress of Biomechanics (WCB 2010), Biomed Engn Soc Singapore, Singapore, SINGAPORE, AUG 01-06, 2010.

[250] Victor De Rancourt, Kais Ammar, Benoit Appolaire, Esteban P. Busso, and Samuel Forest. Modelling stress-diffusion controlled phase transformations : application to stress corrosion cracking. In *CSMA 2013 - 11ème colloque national en calcul des structures*, page 8 p., Giens, France, 2013.

[251] J. Dirrenberger, S. Forest, D. Jeulin, and C. Colin. Homogenization of periodic auxetic materials. *Procedia Engineering*, 10:1847–1852, 2011.

[252] K. D. Trinh and S. Forest. The role of the fluctuation field in higher order homogenization. *PAMM Proc. Appl. Math. Mech.*, 10:431–432, 2010.

[253] M. Mazière, S. Forest, J. Besson, H. Wang, and C. Berdin. Numerical simulation of the portevin le chatelier effect in various materials and at different scales. *Materials Science Forum*, 638–642:2670–2675, 2010.

[254] S. Forest. The micromorphic approach to plasticity and diffusion. In D. Jeulin and S. Forest, editors, *Continuum Models and Discrete Systems 11, Proceedings of the international conference CMDS11*, pages 105–112, Paris, France, 2008. Les Presses de l'Ecole des Mines de Paris.

[255] G. Abrivard, E.P. Busso, G. Cailletaud, and S. Forest. Modeling of deformation of fcc polycrystalline aggregates using a dislocation-based crystal plasticity model. In *9th International Conference on Numerical Methods in Industrial Forming Processes (NUMIFORM 07)*, pages 661–666, Porto, Portugal, 2007. AIP Conference Proceedings.

[256] A. Jean, D. Jeulin, S. Cantournet, S. Forest, V. Mounoury, and F. NGuyen. Rubber with carbon black fillers: Parameter identification of a multiscale nanostructure model. In A. Boukamel, L. Laiarinandrasana, S. Meo, and E. Verron, editors, *Constitutive Models for Rubber V, Proceedings of 5th European Conference on Constitutive Models for Rubber, ECCMR 2007*, pages 141–146, Paris, France, 4–7 september 2007, 2008. Taylor & Francis Group, London.

[257] A. Burteau, J.D. Bartout, S. Forest, Y. Bienvenu, S. Saberi, and D. Naumann. Investigation of Representative Volume Element size for the mechanical properties of open-cell nickel foams. In L. P. Lefebvre, J. Banhart, and D. C. Dunand, editors, *5th Biennial International Conference on Porous Metals and Metallic Foams (MetFoam 2007)*, pages 471–474, Montreal, Canada, 2008.

[258] M. Mazière, J. Besson, S. Forest, B. Tanguy, H. Chalons, and F. Vogel. Simulation de leffet portevin-le chatelier dans un superalliage pour disque de turbomachine. In A. Combescure, P. Gilles, D. Coutelier, S. Drapier, and J.M. Bergheau, editors, *Huitième colloque national en Calcul des structures*, pages 193–198, Giens, France, 2007. Hermès Lavoisier.

[259] F. El Houdaigui, S. Forest, A.-F. Gourgues, and D. Jeulin. Representative volume element sizes for copper bulk polycrystals and thin layer. In O. Hardouin Duparc, editor, *Colloque 3M Matériaux, Mécanique, Microstructures, sur le thème Interfaces : de l'atome au polycristal*, pages 141–153, CEA Saclay / INSTN, 2007.

[260] F. El Houdaigui, S. Forest, A.-F. Gourgues, and D. Jeulin. On the size of the representative volume element for isotropic elastic polycrystalline copper. In Q.S. Zheng Y. Bai and Y.G. Wei, editors, *IUTAM Symposium on Mechanical Behavior and Micro-Mechanics of Nanostructured Materials*, pages 171–180, Beijing, China, 2007. Springer.

[261] N. Marchal, S. Forest, L. Rémy, and S. Duvinage. Simulation of fatigue crack growth in single crystal superalloys using local approach to fracture. In D. Steglich J. Besson, D. Moinereau, editor, *Local approach to fracture, 9th European Mechanics of Materials Conference, Euromech–Mecamat*, pages 353–358, Moret–sur–Loing, France, 2006. Presses de l'Ecole des Mines de Paris.

[262] J. Belotteau, C. Berdin, S. Forest, A. Parrot, and C. Prioul. Strain ageing and prediction of ductile fracture of C-Mn steels. In D. Steglich J. Besson, D. Moinereau, editor, *Local approach to fracture, 9th European Mechanics of Materials Conference, Euromech–Mecamat*, pages 187–192, Moret–sur–Loing, France, 2006. Presses de l'Ecole des Mines de Paris.

[263] A. Zeghadi, S. Forest, A.-F. Gourgues, and O. Bouaziz. Cosserat continuum modelling of grain size effects in metal polycrystals. *PAMM Proc. Appl. Math. Mech.*, 5:79–82, 2005.

[264] S. Graff, H. Dierke, S. Forest, J.-L. Strudel, H. Neuhäuser, C. Prioul, and J.-L. Béchade. Strain heterogeneities by laser scanning extensometry in strain ageing materials : application to zirconium alloys. In Y. Berthaud, editor, *Material and structural identification from full-field measurements, 8th European Mechanics of Materials Conference, Euromech–Mecamat*, Cachan, France, 2005.

[265] D. Jeulin, T. Kanit, and S. Forest. Representative Volume Element : A statistical point of view. In D. Bergman and E. Inan, editors, *Continuum Models and Discrete Systems*, pages 21–27. Kluwer, 2004.

[266] F. Barbe, R. Parisot, S. Forest, and G. Cailletaud. Calibrating a homogenized polycrystal model from large scale FE computations of polycrystalline aggregates. *Journal de Physique IV*, 11:Pr5–277–284, 2001.

[267] S. Forest and R. Parisot. Material crystal plasticity and deformation twinning. *Rendiconti del Seminario Matematico dell'Università e del Politecnico di Torino*, 58:99–111, 2000.

[268] R. Dendievel, S. Forest, and G. Canova. An estimation of overall properties of heterogeneous Cosserat materials. *Journal de Physique IV*, 8:Pr8–111–118, 1998.

[269] S. Kruch and S. Forest. Computation of coarse grain structures using a homogeneous equivalent medium. *Journal de Physique IV*, 8:Pr8–197–205, 1998.

[270] S. Quilici, S. Forest, and G. Cailletaud. On size effects in torsion of multi- and polycrystalline specimens. *Journal de Physique IV*, 8:Pr8–325–332, 1998.

[271] R. Sievert, S. Forest, and R. Trostel. Finite deformation Cosserat-type modelling of dissipative solids and its application to crystal plasticity. *Journal de Physique IV*, 8:Pr8–357–364, 1998.

[272] S. Forest and P. Pilvin. Modelling the cyclic behaviour of two-phase single crystal nickel-base superalloys. In A. Pineau and A. Zaoui, editors, *IUTAM Symposium on micromechanics of plasticity and damage of multiphase materials*, pages 51–58. Kluwer, 1996.

Conferences with Proceedings

[273] S. Forest. Torsion in strain and stress gradient elastoplasticity. In *International Conference on Computational Plasticity. COMPLAS 2021, organized by M. Chiumenti, E. de Souza Neto, D. Peric*, Barcelona, Spain, September 7–9, 2021.

[274] S. Forest. Strain vs stress gradient continuum mechanics. In *ICMM6, 6th International Conference of Material Modeling*, Lund, Sweden, 2019.

[275] M. Amestoy and S. Forest. Retour sur la formulation phénoménologique des lois de comportement viscoélastique. In *Congrès Français de Mécanique, CFM 2019*, Brest, France, August 26–30, 2019.

[276] S. Forest. Homogénéisation des lois de comportement élastoviscoplastique pour le calcul en champs de phase. In *Congrès Français de Mécanique, CFM 2019*, Brest, France, August 26–30, 2019.

[277] S. Forest. Plasticité cristalline à gradient : contributions de C. Teodosiu et leur influence sur les développements récents. In *Congrès Français de Mécanique, CFM 2019*, Brest, France, August 26–30, 2019.

[278] S. Forest. A Cosserat crystal plasticity and phase field approach to grain boundary migration. In *PF19, The 4th International Symposium on Phase-Field Modelling in Materials Science, organized by I. Steinbach and Y. Wang*, July 22–25, Bochum, Germany, 2019.

[279] S. Forest and M. Rubin. Influence of a smooth elastic-inelastic transition model on control of localization. In *ESMC 2018, 10th European Solid Mechanics Conference, organized by D. Bigoni and F. Ubertini*, July 2–6, Bologna, Italy, 2018.

[280] S. Forest, C. Ling, and J. Besson. Regularization operators at finite deformations. application to strain localization in single crystals. In *ICMM5, 5th International Conference of Material Modeling*, Rome, Italy, 2017.

[281] S. Forest. Regularization operators at finite elastoviscoplastic deformationss. In *Numiform 2016, The 12th International Conference on Numerical Methods in Industrial Forming Processes*, Troyes, France, 2016.

[282] S. Forest. The micromorphic approach to plasticity and damage and its application to fatigue crack propagation. In *ICDM2, Second International Conference on Damage Mechanics*, Troyes, France, 2015.

[283] S. Forest and O. Aslan. Microdamage modeling of crack initiation and propagation in metal single crystals. In *CFRAC 2015, 4th International Conference on Computational Modeling of Fracture and Modeling of Materials and Structures*, Cachan, France, 2015.

[284] S. Forest, A. Burteau, F. Fritzen, and D. Kondo. Microstructural mechanics of plasticity in highly porous media. In *EMMC14, 14th European Mechanics of Materials Conference*, Gothenburg, Sweden, 2014.

[285] S. Forest. Inspection of free energy potentials for strain gradient plasticity. In *ICMM3, Third International Conference of Material Modeling*, Warsaw, Poland, 2013.

[286] D. Colas, S. Forest, E. Finot, S. Flouriot, M. Mazière, and T. Paris. Multi-scale approaches of strain ageing effect in polycrystalline tantalum. In J. Eberhardsteiner, H.J. Böhm, and F.G. Rammerstorfer, editors, *CD-ROM Proceedings of the 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)*, September 10-14, 2012, Vienna, Austria, 2012. Vienna University of Technology, Austria, ISBN: 978-3-9502481-9-7.

[287] J. Li, H. Proudhon, S. Forest, and A. Roos. Crystal plasticity finite element simulation using experimental microstructures imaged by X-ray tomography. In J. Eberhardsteiner, H.J. Böhm, and F.G. Rammerstorfer, editors, *CD-ROM Proceedings of the 6th European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2012)*, September 10-14, 2012, Vienna, Austria, 2012. Vienna University of Technology, Austria, ISBN: 978-3-9502481-9-7.

[288] A. Marais, M. Mazière, and S. Forest. Influence of static strain ageing on the ductile to brittle transition in a C-Mn steel. In *ESMC 2012, 8th European Solid Mechanics Conference, organized by G.A. Holzapfel and R.W. Ogden*, Juli 9–13, Graz, Austria, 2012.

[289] P. Sabnis and S. Forest. Modeling crack propagation in nickel base single crystal superalloys using anisotropic damage mechanics. In *ICM11, International Conference on the Mechanical Behavior of Materials*, June 5-9, Como, Italy, 2011.

[290] K. Madi, A. Aufort, G. and; Gasser, and S. Forest. Prediction of the elastic modulus of the trabecular bone based on x-ray computed tomography. In *6th World Congress of Biomechanics (Wcb 2010)*, volume 31, pages 800–803, 2010.

[291] O. Aslan and S. Forest. Generalized continuum modeling of crack propagation in single crystals under cycling loading. In A. Bertram and B. Svendsen, editors, *ICMM1, International Conference on Material Modelling*, Dortmund, RFA, 2009.

[292] M. Mazière, S. Forest, H. Wang, and C. Berdin. Numerical simulation of the Portevin–Le Chatelier effect in various materials and at different scales. In A. Bertram and B. Svendsen, editors, *ICMM1, International Conference on Material Modelling*, Dortmund, RFA, 2009.

[293] H. Wang, C. Berdin, C. Prioul, S. Forest, M. Mazière, and A. Parrot. Numerical modeling of the Portevin–Le Chatelier plastic instabilities in C–Mn steels. In A. Bertram and B. Svendsen, editors, *ICMM1, International Conference on Material Modelling*, Dortmund, RFA, 2009.

[294] A. Zeghadi, S. Forest, A.-F. Gourgues, and O. Bouaziz. Modélisation continue de l'effet de taille de grain sur le comportement mécanique d'aciers ferritiques. In *17ème Congrès Français de Mécanique*, pages 1–6, Troyes, 2005.

[295] K. Madi, F. NGuyen, S. Forest, M. Boussuge, J.-Y. Buffière, and D. Jeulin. Etude de la morphologie tridimensionnelle de réfractaires électrofondus. In *17ème Congrès Français de Mécanique*, pages 1–6, Troyes, 2005.

[296] T. Dillard, F. NGuyen, S. Forest, Y. Bienvenu, J.-D. Bartout, L. Salvo, R. Dendievel, E. Maire, P. Cloetens, and C. Lantuéjoul. In–situ observation of tensile deformation of open–cell nickel foams by means of X–ray microtomography. In J. Banhart, N.A. Fleck, and A. Mortensen, editors, *Cellular Metals Manufacture Properties Applications*, pages 301–306. Verlag MIT Publishing, 2003.

[297] V. Goussery, Y. Bienvenu, S. Forest, A.-F. Gourgues, C. Colin, and J.-D. Bartout. Grain size effects on the mechanical behaviour of open–cell nickel foams. In J. Banhart, N.A. Fleck, and A. Mortensen, editors, *Cellular Metals Manufacture Properties Applications*, pages 419–424. Verlag MIT Publishing, 2003.

[298] S. Forest. Modelling strain localization phenomena in metallic foams. In *EUROMECH Colloquium 459 on Mechanical behaviour of cellular solids*, Nancy, France, 2003.

[299] S. Flouriot and S. Forest. Strain localization at the crack tip in single crystals: Classical/generalized crystal plasticity solutions vs. experimental results for nickel–base superalloys. In *5th Euromech Solid Mechanics Conference*, Thessaloniki, Greece, 2003.

[300] T. Kanit, S. Forest, V. Mounoury, and D. Jeulin. Determination of the representative volume element for homogenization of a two–phase random medium. In *MATERIAUX 2002*, Tours, France, 2002.

[301] F. Barbe, O. Diard, S. Forest, and G. Cailletaud. From local heterogeneous stress-strain fields to inter or intragranular cracking in polycrystalline aggregates : Large scale finite element computations. In *WCCM V, Fifth World Congress on Computational Mechanics*, Vienna, Austria, 2002.

[302] F. Barbe, S. Forest, and G. Cailletaud. Polycrystalline plasticity under small strains. In E. Bouchaud *et al.*, editor, *Physical Aspects of Fracture*, pages 191–206. Kluwer Academic Publishers, 2001.

[303] J. Huang, K. Kalaitzidou, J.W. Sutherland, W.W. Milligan, E.C. Aifantis, R. Sievert, and S. Forest. Gradient plasticity : Implications to chip formation in machining. In A.-M. Habraken, editor, *4th International ESAFORM Conference on Material Forming*, pages 527–530. Université de Liège, Belgium, 2001.

[304] G. Cailletaud, S. Forest, and L. Rémy. Dimensionnement des aubes de turbines monocristallines. In *Journées d'Automne de la SF2M*, Paris, France, 2001.

[305] R. Parisot, S. Forest, and A. Pineau. Deformation mechanisms of zinc : coating vs. bulk material. In D. Miannay, P. Costa, D. François, and A. Pineau, editors, *Advances in Mechanical Behaviour, Plasticity and Damage, EUROMAT 2000*, pages 407–412. Elsevier, 2000.

[306] Y. Bienvenu, J.-D. Bartout, and S. Forest. Metallic foams, some processing and behavioral aspects. In *JMC7, 7èmes Journées de la Matière Condensée*, Poitiers, France, 2000.

[307] J.-M. Cardona and S. Forest. Construction of a second grade homogeneous equivalent medium for heterogeneous materials submitted to slowly-varying mean fields. In *4th Euromech Solid Mechanics Conference*, Metz, France, 2000.

[308] R. Sievert and S. Forest. Remarks on flow rules in strain gradient plasticity theory. In *4th Euromech Solid Mechanics Conference*, Metz, France, 2000.

[309] Y. Chastel, E. Hudry, S. Forest, and C. Peytour. Mechanical behaviour of aluminium foam for various deformation paths. Experiment and modelling. In J. Banhart, M.F. Ashby, and N.A. Fleck, editors, *Metal foams and Porous Metal Structures*, pages 263–268. Verlag MIT Publishing, 1999.

[310] F. Barbe, G. Cailletaud, and S. Forest. F.E. study of the surface effect in polycrystalline aggregates. In *Transactions of the 15th International Conference on Structural Mechanics in Reactor Technology (SMiRT-15)*, pages XII–17–28, Seoul, Korea, 1999.

[311] J.-M. Cardona and S. Forest. Analyse par éléments finis de l'élasticité des milieux du second gradient. In *14ème Congrès Français de Mécanique*, Toulouse, 1999.

[312] J. Besson, F. Bultel, and S. Forest. Plasticité des milieux de Cosserat. In *4ème Colloque en Calcul des Structures, CSMA*, pages 759–764, Giens, 1999. Teknea.

[313] S. Forest. Identification of material parameters for elastoplastic Cosserat continua using homogenization methods. In F. Darve and B. Loret, editors, *Conference to the memory of J.-P. Boehler*, Grenoble, 1999.

[314] F. Barbe, S. Forest, and G. Cailletaud. Modelling grain size and free surface effects in polycrystals. In S. Schmauder and M. Dong, editors, *8th International Workshop in Computational Mechanics of Materials*, University of Stuttgart, 1998.

[315] Ch. Bourgin, Th. Guibert, J.-D. Bartout, Y. Bienvenu, S. Forest, H. Bernet, and M. Croset. Caractérisation et modélisation du comportement mécanique des mousses de nickel. In *Colloque National de Métallurgie des Poudres, SF2M, Commission de Métallurgie des Poudres et Frittage*, Grenoble, 1998.

[316] S. Forest. A Cosserat theory for single crystals with application to strain localisation phenomena. In J. Salençon, editor, *Symposium Saint-Venant, Multiple scale analyses and coupled physical systems*, pages 373–380, Ecole Nationale des Ponts et Chaussées, 1997. Presses de l'ENPC.

[317] M.D. Dupuits, S. Forest, and M. Boussuge. Characterisation and simulation of the mechanical behaviour of multilayered components composing a fibrous head gasket. In A. Vautrin, editor, *EUROMECH 360, Mechanics of sandwich structures : modelling, numerical simulation, experimental identification*, pages 139–146, St Etienne, 1997. Kluwer Academic Publishers.

[318] S. Forest, J. Han, P. Pilvin, and J. Olschewski. Parameter identification for anisotropic gas turbine blade alloys. In J.A. Désidéri, C. Hirsch, and P. Le Tallec, editors, *ECCOMAS Computational methods in applied sciences'96*, pages 393–400. J. Wiley, 1996.

[319] S. Forest, J. Olschewski, J. Ziebs, H.-J. Kühn, J. Meersmann, and H. Frenz. The elastic/plastic deformation behaviour of various oriented sc16 single crystals under combined tension/torsion fatigue loading. In G. Lütjering and H. Nowack, editors, *Sixth International Fatigue Congress*, pages 1087–1092. Pergamon, 1996.

Books and chapters of books

[320] D. Bigoni, S. Forest, and S. Stupkiewicz. Preface to the special issue on material instabilities and micromechanics – energy methods, instabilities, microstructures and thermodynamics of dissipative solids. *International Journal of Solids and Structures*, 236-237:111340, 2022.

[321] S. Forest. Crystal plasticity and damage at cracks and notches in nickel-base single crystal superalloys. In G. Cailletaud, J. Cormier, G. Eggeler, V. Maurel, and L. Nazé, editors, *Nickel Base Single Crystal across length scales*, pages 457–473. Elsevier, 2021.

[322] A. Bertram and S. Forest. *Mechanics of strain gradient materials*. Springer, CISM International Centre for Mechanical Sciences, vol. 600, ISBN: 978-3-030-43829-6, 171 pages, 2020.

[323] S. Forest and F. Willot. Physics and mechanics of random structures: From morphology to material properties. *Special Issue of International Journal of Solids and Structures in honor of Professor Dominique Jeulin (Mines ParisTech)*, 184:1–2, 2020.

[324] J. Dirrenberger, S. Forest, and D. Jeulin. *Computational Homogenization of Architectured Materials*, pages 89–139. Springer International Publishing, 2019.

[325] S. Mesarovic, S. Forest, and H. Zbib Editors. *Mesoscale Models. From Micro-Physics to Macro-Interpretation*. Springer, CISM International Centre for Mechanical Sciences, vol. 587, ISBN: 978-3-319-94186-8, 344 pages, 2019.

[326] S. Forest. Micromorphic approach to gradient plasticity and damage. In G. Z. Voyiadjis, editor, *Handbook of Nonlocal Continuum Mechanics for Materials and Structures*, pages 1–47. Springer International Publishing, 2018.

[327] S. Forest, J. R. Mayeur, and D. L. McDowell. Micromorphic crystal plasticity. In G. Z. Voyiadjis, editor, *Handbook of Nonlocal Continuum Mechanics for Materials and Structures*, pages 1–44. Springer International Publishing, 2018.

[328] S. Forest. Micromorphic approach to materials with internal length. In H. Altenbach and A. Öchsner, editors, *Encyclopedia of Continuum Mechanics*, pages 1–11. Springer Berlin Heidelberg, 2018.

[329] F. Willot and S. Forest Editors. *Physics and Mechanics of Random Media: From Morphology to Material Properties, A tribute to Dominique Jeulin's contributions*. Presses des Mines, ISBN : 978–2-35671-529–6, 315 pages, 2018.

[330] J. R. Mayeur, D. L. McDowell, and S. Forest. Micropolar crystal plasticity. In George Z. Voyiadjis, editor, *Handbook of Nonlocal Continuum Mechanics for Materials and Structures*, pages 1–47. Springer International Publishing, 2018.

[331] S. Forest. Use and abuse of the method of virtual power in generalized continuum mechanics and thermodynamics. In H. Altenbach, J. Pouget, M. Rousseau, B. Collet, and T. Michelitsch, editors, *Generalized Models and Non-classical Approaches in Complex Materials 1*, pages 311–334. Springer International Publishing, 2018.

[332] G. Del Piero, S. Forest, and P. Seppecher. *Mécanique des milieux continus généralisés*. Mécanique Théorique Collection. Cépaduès EDITIONS, 2017.

[333] H. Altenbach and S. (eds.) Forest. *Generalized continua as models for classical and advanced materials*. Advanced Structured Materials vol. 42, Springer, ISBN : 978-3-319-31719-9, 456 pages, 2016.

[334] E. Maire and S. Forest. Calcul de microstructures. In J.Y. Buffière et E. Maire, editor, *Imagerie 3D en mécanique des matériaux*, pages 267–282. Hermes–Lavoisier, Paris, 2014.

[335] S. Forest and Q.S. Zheng. *Frontiers of micro and nanomechanics of materials: Soft or amorphous matter, surface effects*. Special Issue of Comptes Rendus Mécanique, vol. 342, Issue 5, pp. 263–346, 2014.

[336] F. Dell'Isola and S. Forest. Second gradient and generalized continua. A workshop held on 12–16 March 2012 in Cisterna di Latina. *ZAMM–Z. Angew. Math. Mech.*, 94:367–372, 2014.

[337] S. Forest, K. Ammar, B. Appolaire, N.M. Cordero, and A. Gaubert. Micromorphic approach to crystal plasticity and phase transformation. In J. Schroeder and K. Hackl, editors, *Plasticity and beyond*, pages 131–198. CISM International Centre for Mechanical Sciences, Courses and Lectures No. 550, Springer, 2014.

[338] Anton Krivtsov (eds.) Holm Altenbach, Samuel Forest. *Generalized Continua as Models for Materials: with Multi-scale Effects or Under Multi-field Actions*. Advanced Structured Materials 22. Springer-Verlag Berlin Heidelberg, 2013.

[339] S. Forest. Asymptotic analysis of heterogeneous micromorphic elastic solids. In R.B. Hetnarski, editor, *Encyclopedia of Thermal Stresses*, pages 239–251. Springer, 2014.

[340] S. Forest. Gradient thermoplasticity. In R.B. Hetnarski, editor, *Encyclopedia of Thermal Stresses*, pages 2012–2025. Springer, 2014.

[341] S. Forest. Generalized continuum modelling of crystal plasticity. In C. Sansour and S. Skatulla, editors, *Generalized continua and dislocation theory*, pages 181–287. CISM International Centre for Mechanical Sciences, Courses and Lectures No. 537, Springer, 2012.

[342] S. Forest. Micromorphic media. In H. Altenbach and V. Eremeyev, editors, *Generalized Continua – from the Theory to Engineering Applications*, pages 249–300. CISM International Centre for Mechanical Sciences, Courses and Lectures No. 541, Springer, 2012.

[343] O. Thomas, A. Ponchet, and S. Forest Editors. *Mechanics of Nano–objects*. Presses des Mines, ISBN : 978–2911256–67–7, 380 pages, 2011.

[344] S. Forest, K. Ammar, and B. Appolaire. Micromorphic vs. phase–field approaches for gradient viscoplasticity and phase transformations. In B. Markert, editor, *Advances in Extended and Multifield Theories for Continua*, pages 69–88. Lecture Notes in Applied and Computational Mechanics 59, Springer, 2011.

[345] S. Forest and A. Bertram. Formulations of strain gradient plasticity. In H. Altenbach, G. A. Maugin, and V. Erofeev, editors, *Mechanics of Generalized Continua*, pages 137–150. Advanced Structured Materials vol. 7, Springer, 2011.

[346] N. M. Cordero, S. Forest, E. P. Busso, S. Berbenni, and M. Cherkaoui. Grain size effect in generalized continuum crystal plasticity. In I. R. Ionescu, S. Bouvier, O. Cazacu, and P. Franciosi, editors, *Plasticity of crystalline materials*, pages 101–122. ISTE-Wiley, 2011.

[347] O. Aslan and S. Forest. The micromorphic versus phase field approach to gradient plasticity and damage with application to cracking in metal single crystals. In R. de Borst and E. Ramm, editors, *Multiscale Methods in Computational Mechanics*, pages 135–154. Lecture Notes in Applied and Computational Mechanics 55, Springer, 2011.

[348] J. Besson, G. Cailletaud, J.-L. Chaboche, S. Forest, and M. Blétry. *Non–Linear Mechanics of Materials*. Solid Mechanics and Its Applications 167. Springer-Verlag Berlin Heidelberg, 2009.

[349] G. Cailletaud, S. Forest, and S. Schmauder. *Proceedings of the 17th International Workshop on Computational Mechanics of Materials, IWCMM17, held in Paris August 22nd–24th 2007*. Special Issue of Computational Materials Science, vol. 45, pp. 589–844, 2009.

[350] D. Jeulin and S. Forest. *Continuum Models and Discrete Systems 11, Proceedings of the international conference CMDS11, held in Paris July 30th–August 2nd 2007*. Les Presses de l'Ecole des Mines de Paris, 2008.

[351] S. Forest. *Milieux continus généralisés et matériaux hétérogènes*. Les Presses de l'Ecole des Mines de Paris, ISBN : 2-911762-67-3, 200 pages, 2006.

[352] S. Forest. Generalized continua. In K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer, and S. Mahajan, editors, *Encyclopedia of Materials : Science and Technology updates*, pages 1–7. Elsevier, Oxford, 2005.

[353] S. Forest and M. Amestoy. *Mécanique des milieux continus*. Cours de l'Ecole des Mines de Paris n° 3121, 264 pages, 2004, 2005, 2006.

[354] S. Forest. *Milieux continus généralisés et matériaux hétérogènes*. Mémoire d'habilitation à diriger des recherches, 2004.

[355] S. Forest. Generalized continuum modelling of single and polycrystal plasticity, chapter 25. In D. Raabe, F. Roters, F. Barlat, and L.Q. Chen, editors, *Continuum Scale Simulation of Engineering Materials*, pages 513–526. Wiley–VCH, 2004.

[356] S. Forest and E. Lorentz. Localization and regularization. In J. Besson, editor, *Local approach to fracture*, pages 311–373. Ecole des Mines de Paris–Les Presses, 2004.

[357] M. Fivel and S. Forest. *Plasticité cristalline et transition d'échelle : cas du polycristal*. Techniques de l'Ingénieur, M4017, 11 pages, 2004.

[358] M. Fivel and S. Forest. *Plasticité cristalline et transition d'échelle : cas du monocristal*. Techniques de l'Ingénieur, M4016, 23 pages, 2004.

[359] S. Forest. Generalized continua. In K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer, and S. Mahajan, editors, *Encyclopedia of Materials : Science and Technology*, pages 1–8. Elsevier, 2004.

[360] J. Besson, G. Cailletaud, J.-L. Chaboche, and S. Forest. *Mécanique non linéaire des matériaux*. ISBN 2-7462-0268-9, EAN13 9782746202689, 445 p., Hermès, France, 2001.

[361] S. Forest. Cosserat media. In K.H.J. Buschow, R.W. Cahn, M.C. Flemings, B. Ilschner, E.J. Kramer, and S. Mahajan, editors, *Encyclopedia of Materials : Science and Technology*, pages 1715–1718. Elsevier, 2001–2004.

[362] S. Forest, E. van der Giessen, and L. Kubin, Editors. *Scale transitions from atomistics to continuum plasticity*. J. Phys. IV, France, Vol. 11, Pr5, Les Editions de Physique, 2001.

[363] S. Forest, J.-M. Cardona, and R. Sievert. Thermoelasticity of second-grade media. In G.A. Maugin, R. Drouot, and F. Sidoroff, editors, *Continuum Thermomechanics, The Art and Science of Modelling Material Behaviour, Paul Germain's Anniversary Volume*, pages 163–176. Kluwer Academic Publishers, 2000.

[364] J. Ziebs, J. Bressers, H. Frenz, D.R. Hayhurst, H. Klingelhöffer, and S. Forest. *Proceedings of the International Symposium on Local strain and temperature measurements in non-uniform fields at elevated temperatures, Berlin*. Woodhead Publishing Limited, 1996.

2 Organisation of international conferences

Organisation of the IUTAM Symposium on *Generalized continua emerging from microstructures*, a hybrid conference, Paris, 19–23 July 2021. https://iutam-2021-gc.sciencesconf.org

Organiser with F. Willot of the international workshop in honor and in the presence of Dominique Jeulin, *Physics and mechanics of random structures: from morphology to material properties* île d'Oléron, France, June 17–22, 2018.
Organiser of a Symposium at the 15th Euromech Mechanics of Materials Conference *Higher order continua* at EMMC 2016, Bruxelles, Belgique, Septembre 7–9, 2016, and EMMC 16 in Nantes, 25-28 March 2018.

Co–organiser with C. Niordson of a Thematic Session on *Sizescale Effects in Materials* at ICTAM 2016, Montréal, Canada, August 21–26, 2016.

Co–organiser with H. Altenbach of the third advanced seminar on *Generalized continua as models for materials with multi–scale effects or under multi–field actions*, Otto-von-Guericke Universität MAgdeburg, Septembre 21–25, 2015.

Co–organiser with C. Miehe and C. Linder of a mini-symposium dedicated to *Microstructural Based Constitutive Models in Hard and Soft Matter Materials* within the 11th. World Congress on Computational Mechanics (WCCM XI), Barcelona, 20–25 July 2014.

Co–organiser with F. dell'Isola of the Euromech Colloquium 563 on *Generalized continua and their application to the design of composites and metamaterials*, M&MOCS, Research Center on Mathematics and Mechanics of Complex Systems, Universita degli Studi dell'Aquila, Cisterna di Latina, Italy, March 17–21 2014.

Co–organizer with H. Altenbach and A. Krivtsov of the second trilateral Russian–German–French seminar on *Generalized continua as models for materials with multi–scale effects or under multi–field actions*, sponsored by CNRS–DFG-FRRF agencies, Leucorea, Lutherstadt–Wittenberg, Germany, 26–30th September, 2012.

Co–organizer with K. Sab of the Mini-Symposium, *Numerical simulation of microstructures* at ECCOMAS 2012, 6th European Congress of Computational Methods in Applied Sciences and Engineering, organized by J. Eberhardsteiner, H.J. Böhm, F.G. Rammerstorfer, Vienna, Austria, September 10–14, 2012.

Co–organizer with B. Markert of the Symposium, *Trends in phase field modeling* at the 8th European Solid Mechanics Conference, Graz, Austria, Juli 9–13, 2012.

Organizer of the Symposium, *New perspectives in numerical modeling of mechanical behaviour of materials* at the International Conference on the Mechanical Behavior of Materials, Como, Italy, June 5–9 2011.

Co-organizer of the CNRS Summer School on *Archimat, Architectured materials*, with R. Dendievel and Y. Bréchet, Autrans, 22–28 May, 2011.

Co-organizer of the CNRS Summer School on *Mechanics of Nano–Objects*, Autrans, March 14–19, 2010, emanating from the CNRS GDR Mécano.

17th International Workshop on Computational Mechanics of Materials, IWCMM17, organized by G. Cailletaud, S. Forest and S. Schmauder, Paris, 22–24th august 2007.

11th International Symposium on Continuum Models and Discrete Systems, CMDS11, organized by D. Jeulin, member of the organizing and scientific committees, Paris, 30 july–3 august 2007.

Scale transitions from atomistics to continuum plasticity, 5th Euromech–Mécamat European Mechanics of Materials Conference, EMMC5, Delft, The Netherlands, 5–8 march 2001, *J. Phys. IV*, Vol. 11, Pr. 5, 2001.

Heterogeneous materials and generalized continua : mini–symposium of ESMC4 (Fourth Euromech Solid Mechanics Conference), organized with Dr. R. Sievert (BAM - Berlin) : 10 oral presentations + 15 posters, Metz, june 2000.

Porous materials and foams : material processing, structure and properties, symposium organized by Y. Bienvenu, P. Bompard and S. Forest at Journées d'Automne de la SF2M, Paris, 1998.

Member of Organization committee of the 2nd European Mechanics of Materials Conference on Mechanics of Materials with Intrinsic Length Scale, EMMC2, Magdeburg, Germany, 23-26 february 1998, *J. Phys. IV*, Vol. 8, Pr. 8, 1998.

Local strain and temperature measurements in non-uniform fields at elevated temperatures, Proceedings of the International Symposium held at Berlin, Germany, 14-15 March 1996, edited by J. Ziebs, J. Bressers, H. Frenz, D.R. Hayhurst, H. Klingelhöffer and S. Forest, Woodhead Publishing Limited, 1996.

3 Visits and stays in other institutions

Three weeks stay at the Institut fuer Mechanik of the Otto–von–Guericke Universitaet Magdeburg (Germany) with Prof. Albrecht Bertram, April 2012.

Two weeks at the International Research Center for Mathematics and Mechanics of Complex Systems (M& MOCS) de l'Univeristé La Sapienza, Rome, with Prof. F. Dell'Isola, April 2011.

One week at the Budapest University of Technology and Economics, wit Prof. Laszlo Szabo, Applied Mechanics Department, June 2008.

Two–week stay at the Weierstrass Institut für Angewandte Analysis und Stochastik (WIAS), with Prof. W. Dreyer, Berlin, february 2004.

Six–week stay at the Institut für Theoretische Physik (TU Berlin, FRG), with Prof. W. Muschik, june–july 2003.

One–week stay at Aristotle Technical University, Thessaloniki, Greece, in the group of Professor E.C. Aifantis, january 2001.

3-day stay at Partielle Differentialgleichungen und anwendbare Analysis of Technical University Darmstadt, invitation of Professor Hans-Dieter Alber (Fachbereich Mathematik), november 1999.

1-week stay at Mechanics Institue of Otto-von-Guericke University in Magdeburg (RFA, Décembre 1997) as invited scientist.

One-year stay at Bundesanstalt für Materialprüfung und Forschung (BAM - Berlin), within the framework of BRITE EURAM Project "Development of Microstructure Based Viscoplastic Models for an Advanced Design of Single Crystal Hot Section Components", 1994-1995.

4 Teaching Activities

PhD students

1998 **Marie-Dominique Dupuits** (coencadrement M. Boussuge, 14 juin 1998) : *Etude expérimentale et modélisation du comportement d'un matériau de joint de culasse pour application automobile*, (partenaire **RENAULT**).

2000 **Jean-Marc Cardona** (coencadrement G. Cailletaud, 20 décembre 2000) : *Comportement et durée de vie des pièces multiperforées : application aux aubes de turbine* (partenaire **SNECMA**).

2000 **Fabrice Barbe** (coencadrement G. Cailletaud, 22 décembre 2000) : *Modélisation du comportement mécanique d'agrégats polycristallins*.

2000 **Pascal Boubidi** (coencadrement G. Cailletaud, 18 décembre 2000) : *Experimental characterization and numerical modelling of low cycle fatigue in a nickel base single crystal superalloy under multiaxial loading*, thèse européenne en liaison avec le BAM-Berlin (projet européen **BRITE-EURAM**).

2001 **Rodolphe Parisot** (coencadrement A. Pineau, 5 avril 2001) : *Microstructure, déformation et endommagement d'un revêtement de zinc sur tôle d'acier*, (partenaire **SOLLAC**).

2003 **Jean-Sébastien Blazy** (coencadrement Y. Chastel (Cemef), 25 avril 2003), *Comportement mécanique des mousses d'aluminium : caractérisations expérimentales sous sollicitations complexes et simulations numériques dans le cadre de la l'élasto–plasticité compressible*, (partenaire **RENAULT**).

2003 **Toufik Kanit** (coencadrement D. Jeulin (Morphologie Mathématique), 12 mai 2003), *Notion de volume élémentaire représentatif pour les matériaux hétérogènes : approche numérique et statistique*, (partenaire **UNILEVER, UK**).

2003 **Virginie Goussery** (coencadrement Y. Bienvenu, 2 mars 2004), *Caractérisations microstructurale et mécanique de mousses de nickel à cellules ouvertes pour batteries de véhicules hybrides*, (partenaires **NITECH, INCO**).

2003 **Thierry Dillard** (coencadrement Y. Bienvenu, 4 mars 2004), *Caractérisation et simulation numérique du comportement mécanique des mousses de nickel : morphologie tridimensionnelle, réponse élastoplastique et rupture*, (partenaire **NITECH**).

2004 **Sylvain Flouriot** (coencadrement L. Rémy, 4 juin 2004), *Simulation de la fissuration en fatigue dans les superalliages à base de nickel monocristallins* (partenaire **SNECMA**).

2005 **Asmahana Zeghadi** (8 décembre 2005), *Effets de la morphologie tri–dimensionnelle et de la taille de grain sur le comportement mécanique d'agrégats polycristallins*, (partenaire **ARCELOR**).

2006 **Stéphanie Graff** (13 octobre 2006, coencadrement avec J.–L. Strudel et C. Prioul, Ecole Centrale de Paris) : *Simulation des instabilités de type Portevin–Le Chatelier, application aux anomalies de comportement viscoplastique du zirconium* (partenaire **CEA–CNRS**, CPR SMIRN).

2006 **Nicolas Marchal** (9 juin 2006, coencadrement L. Rémy), *Fissuration à haute température de superalliages monocristallins à base de nickel*, (projet européen **SOCRAX**).

2006 **Kamel Madi** (coadvisor M. Boussuge, 21 décembre 2006), *Caractérisation et simulation du comportement viscoplastique de réfractaires électrofondus à partir de leur microstructure*, (partenaire **SAINT–GOBAIN**).

2007 **Matthieu Mazière** (coencadrement J. Besson, B. Tanguy, 21 novembre 2007), *Prévision de l'éclatement de disques de turbines* (partenaire **SNECMA–TURBOMECA PRC DDV**).

2007 **Filip Siska** (coencadrement, P. Gumbsch, IWM Freiburg (Germany), 26 novembre 2007), *Approches continues et discrètes pour la plasticité des films minces métalliques* (réseau européen **SIZEDEPEN**).

2009 **Jeanne Belotteau** (coencadrement C. Prioul, C. Berdin, Ecole Centrale de Paris, 21 janvier 2009) *Comportement et rupture d'un acier au C-Mn en présence de vieillissement sous déformation*, (partenaire **EDF**).

2009 **Aurélie Jean** (coencadrement D. Jeulin, S. Cantournet, 19 février 2009), *Etude d'un élastomère chargé: de la nanostructure au macro-comportement* (partenaire **Michelin**).

2009 Guillaume Abrivard (coencadrement E. Busso, 20 novembre 2009), *A coupled crystal plasticity–phase field formulation to describe microstructural evolution in polycrystalline aggregates* (projet européen DIGIMAT).

2009 Anaïs Gaubert (coencadrement F. Gallerneau, 30 novembre 2009), *Modélisation des effets de l'évolution microstructurale sur le comportement mécanique du superalliage moncristallin AM1* (thèse ONERA, DGA).

2010 Kais Ammar (coencadrement G. Cailletaud, B. Appolaire, 20 janvier 2010), *Modelling and simulation of phase transformation-mechanics coupling using a phase field method*, (pôle de compétitivité **System@tic**).

2010 Ozgur Aslan (29 mars 2010), *Microdamage modeling of fatigue crack growth in single crystal nickel-base superalloys* (projet européen STREP **Rolls Royce, RRD, SNECMA, Avio, MTU, Volvo, Siemens, Turboméca...**).

2011 Huaidong Wang (co–encadrement C. Berdin–Méric, M. Mazière, 18 mai 2011), *Comportement mécanique et rupture des aciers au C-Mn en présence de vieillissement dynamique sous déformation*, (thèse Centrale Paris, partenaire **EDF**).

2011 Nicolas Cordero (coencadrement E. Busso, 30 septembre 2011), *A Strain Gradient Approach to the Mechanics of Micro and Nanocrystals*, (projet **ANR Nanocrystals**).

2011 Duy Khan Trinh (18 novembre 2011), *Modèles d'homogénéisation d'ordre supérieur pour les matériaux architecturés*, (CPR CNRS Matériaux Architecturés Multifonctionnels).

2011 Gwenael Trego (coencadrement A.F. Gourgues, 20 décembre 2011), *Comportement en fluage à haute température dans le domaine biphasé* $(\alpha+\beta)$ *de l'alliage M5* (partenaire **CEA Saclay**).

2012 Yang Ding (coencadrement M. Boussuge, 28 mars 2012), *Analyse morphologique de la microstructure 3D de réfractaires électrofondus à très haute teneur en zircone : relations avec les propriétés mécaniques, chimiques et le comportement pendant la transformation quadratique-monoclinique* (partenaire **Saint-Gobain**).

2012 Prajwal Sabnis (16 novembre 2012), *Modelling the propagation and bifurcation of plasticity induced cracks in Nickel base single crystal superalloys* (PRC Structures Chaudes, **ONERA, SNECMA**).

2012 Anthony Marais (26 novembre 2012, coencadrement M. Mazière), *Impact du vieillissement statique sur la transition ductile–fragile d'un acier C-Mn* (partenaire **EDF**).

2012 Antonin Steckmeyer (28 novembre 2012, coencadrement B. Fournier et S. Vincent), *Caractérisation et modélisation du comportement mécanique à haute température des aciers ferritiques renforcés par dispersion d'oxydes*, (partenaire **CEA Saclay**).

2012 Justin Dirrenberger (10 décembre 2012, coencadrement D. Jeulin), *Effective properties of architectured materials* (projet **ANR Mansart**).

2012 Xu Han (14 décembre 2012, coencadrement J. Besson et B. Tanguy), *Modélisation de la fragilisation due au gonflement dans les aciers inoxydables austénitiques irradiés*, (partenaire **CEA Saclay**).

2013 Damien Colas, (8 novembre 2013, co-advisor E. Finot and M. Mazière), *Approche multi-échelles du vieillissement et du comportement mécanique cyclique dans le tantale* (partenaire **CEA–DAM Valduc**).

2014 **Alexandre Iltchev** (16 décembre 2014, co-advisors V. Marcadon and S. Kruch), *Periodic homogenisation of a cellular material in elastoplasticity and application to structural modelling : from small to large deformations*, (partenaire **ONERA**).

2015 **Aurélien Villani** (12 février 2015, co–advisor E.P. Busso), *A multi-physics modelling framework to describe the behaviour of nano-scale multilayer systems undergoing irradiation damage*, (projet européen **RADINTERFACE**).

2015 **Victor de Rancourt** (12 juin 2015, co-advisor B. Appolaire, E. Busso), *Modelling the oxidation of polycrystalline austenitic stainless steels using a phase field approach coupled with mechanics*, (Chaire **EDF**).

2015 **Arina Marchenko** (23 novembre 2015, co–advisor M. Mazière), *Multiscale investigation and modelling of room–temperature creep and sustained load cracking of titanium and quasi* α *Ti–alloys: Influence of hydrogen and oxygen content* (projet **ANR FLUTI**).

2015 **Erembert Nizery** (4 decembre 2015, advisor: JY Buffière (INSA Lyon), co-advisors: H. Proudhon, S. Forest), *Amorçage et propagation des fissures de fatigue dans les alliages d'aluminium 2050–T8 et 7050–T7451*, (partenaire **Constellium**).

2015 **Jia Li** (15 decembre 2015, advisors: S. Forest, H. Proudhon), *3D study of deformation and fatigue crack propagation of polycrystalline materials* (projet **ANR CRYSTAL**).

2016 **Pierre-Louis Valdenaire** (1 fevrier 2016, advisors: A. Finel, Y. Lebouar, S. Forest), *Crystal plasticity–Transport equations and dislocation density*, (ONERA-LEM).

2017 **Chao Ling**, (24 janvier 2017, advisors: J. Besson, S. Forest, B. Tanguy), *Modélisation polycristalline de l'endommagement ductile dans les inoxydables austénitiques irradiés* (partenaire **CEA–EDF**).

2017 **Nicolas Guéninchault**, (24 mars 2017, advisors: H. Proudhon, S. Forest, W. Ludwig), *Experimental and numerical investigation of incipient plasticity in FCC polycrystals by X-ray synchrotron topotomography and CPFEM*, (partenaire **ESRF-Grenoble**).

2017 **Tang Gu**, (19 avril 2017, advisors: O. Castelnau, S. Forest, E. Hervé, H. Proudhon), *Multiscale modeling of the electrical and elasto-plastic behavior of architectured and nanostructured Cu-Nb composite wires*, (projet **ANR METAFORES**).

2018 **Sicong Ren**, (18 janvier 2018, advisors: M. Mazière, T. Morgeneyer, S. Forest, G. Rousselier), *Field measurements and finite element simulations of the interaction between dynamic strain ageing and ductile damage in metallic alloys*, (thèse OPEN Centre des Matériaux).

2019 **Moubine Al Kotob**, (14 janvier 2019, advisors: S. Forest, M. Mazière, T. Rose, C. Combescure), *Competition between global and local instabilities in the failure of aeronautical structures*, (partenaire **SafranTech**).

2019 **Laurent Lacourt**, (14 octobre 2019, co-advisor D. Ryckelynck, F. Willot), *Etude numérique de la nocivité des défauts dans les soudures*, (partenaire **CEA–DAM Valduc**).

2019 **Aldo Marano**, (20 novembre 2019, co-advisor L. Gélébart), *Simulation numérique de la localisation intra-granulaire de la déformation au sein de polycristaux irradiés*, (partenaire **CEA Saclay**).

2019 **Harris Farooq**, (3 décembre 2019, co-advisors G. Cailletaud et D. Ryckelynck), *Crystal plasticity applied to aggregates under non-symmetric cyclic loadings: Mechanical analysis and model order reduction*, (partenaire **Chaire Cristal SafranTech**).

2020 Jean-Michel Scherer, (19 octobre 2020, co-advisors J. Besson, B. Tanguy, J. Hure), *Strain localization and ductile fracture in single crystals: application to irradiated austenitic stainless steels*, (partenaire **CEA Saclay**).

Post–docs

2002–2004 Fouad El Houdaigui : Dimensionnement d'un composant multicristallin d'un micro–système mécanique (partenaire **SAGEM**)

2003–2005 Hakim Benouali : Modèles continus pour la plasticité des mousses métalliques (projet européen **DEFINO**)

2006–2007 Ovidi Casals : Indentation of metal thin films (projet européen **SizeDepEn**)

2009–2010 Hyung–Jun Chang : Comparing DDD and gradient plasticity models (**ANR Cat-Size**)

2009–2011 Kais Ammar : Phase field and gradient plasticity models (**ANR COUPHIN**)

2013–2014 Abderrahim El Khabbaz : Conception d'un matériau architecturé pour les tubes de générateur de vapeur des centrales nucléaires (**Chaire AREVA**)

2015–2016 Martin Horak : Order reduction methods for generalized continua (**ANR Micromorfing**)

2016–2018 Anna Ask : Cosserat phase field modelling and simulation of viscoplasticity induced grain boundary migration and recrystallisation in metallic polycrystals (**Marie Sklodowska Curie Action H2020**)

2018–2019 Le Lu Tuan : Multiscale modelling of new high strength and high strain hardening titanium alloys (**ANR TITWIP**)

Teaching activities

Course on *Continuum Mechanics* at Ecole des Mines de Paris (35 hours including magistral courses and training sessions). The course is available at mms2.ensmp.fr (2004–...).

Master course MAGIS *Internal lengths in metal deformation*, (9h), 2009–....

Master course DMSE *Multiscale plasticity of metals and alloys*, (9h), 2010–....

Exercises of the course on *Mechanics of Solid Materials* with Prof. G. Cailletaud first year student at Ecole des Mines de Paris, 1996–2001 (16h).

Major on *Mechanics of inelastic solids* (1997, 1999,2001) : course on *Nonlinear constitutive equations at finite strain* (3h) and small project on the finite element method for nonlinear solids.

Summer schools and training sessions for researchers, doctoral students and engineers

Summer Schools on Mechanics of generalized continua and their applications to engineering materials and structures (co-organizer):

- *Inaugural Summer School*, Arpino (Italy), July 20–26th 2015, 40 participants
- *Elastic Meta-Materials*, Alghero (Italy), 22–29 May 2016, 40 participants

CISM Advanced School on *Mesoscale models: From micro–physics to macro–interpretation*, coordinated by S. Forest, S. Mesarovic and H. Zbib, lectures by I. Groma, D. McDowell and J.N. Roux, Udine May 22–26 2017.
French–German Summer School on *Evolutionary Solid Bodies*, organised by F.J. Barthold and J.F. Ganghoffer under the auspices of the Université Franco–allemande/Deutsch–Französische Hochscule, Bollendorf, Oct. 4-10, 2015.

Second Summer School of Theoretical Mechanics on *Mechanics of Generalized Continua*, courses by G. Del Piero, S. Forest and P. Seppecher, Quiberon (France, June 3–8 2013.

GAMM *Multiscale Material Modeling* Summer School 2012, organized by T. Böhlke, S. Diebels and B. Svendsen, Bad Herrenalb, Germany, September 2-7, 2012.

CISM Advanced School on *Generalized continua: From the theory to engineering applications*, coordinated by Holm Altenbach and Victo Eremeyev, lectures by H. Altenbach, R. De Borst, V. Eremeyev, S. Forest, G. Maugin, P. Steinmann, Udine September 19–23 2011.

CISM Advanced School on *Plasticity and beyond: Microstructures, crystal plasticity and phase transitions*, coordinated by Joerg Schroeder and Klaus Hackl, lectures by S. Forest, K. Hackl, J. Kratochvil, M. Kuroda, V. Levitas and J. Schroeder, Udine June 27–July 1 2011.

CNRS Advanced School, *ARCHIMAT, Matériaux architecturés multifonctionnels*, Autrans, 22–28 May 2011.

CNRS Advanced School, *Scale transitions in the mechanics of materials*, CE2M10, Briançon, August 23–Septembre 3 2010.

CNRS Advanced School, *Mechanics of Nano–Objects*, Autrans, March 14–19, 2010.

French–German Advanced School, *Vom Modell zum Experiment*, Bad Herrenalb, RFA, 6-12 septembre 2009.

CISM Advanced School on *Generalized continua and dislocation theory: Theoretical concepts, computational methods and experimental verification*, coordinated by Carlo Sansour, lectures by M. Fivel, S. Forest, K. Hemker, G. Maugin, C. Sansour and H. Zbib, Udine, 9–13th july 2007.

European master in Computational Mechanics of Materials and Structures (COMMAS), 3 lectures on Micromechanics of single and polycrystals, 10–11 oct. 2006, Universität Stuttgart, organized by Prof. Miehe.

Short Course in Mathematical Modelling in Solid Mechanics, organized by the Fakultät für Mathematik Universität Karlsruhe, Institut für praktische Mathematik, C. Wieners, teachers: S. Forest, P. Neff and C. Wieners, 5–7 october 2005.

Mécanique non linéaire des matériaux : comportement, endommagement et méthodes numériques, J. Besson, G. Cailletaud, J.L. Chaboche et S. Forest, formation IPSI, 16-19 septembre, Paris, 1997.

Participation in Summer Schools as a student

Size–dependent mechanical properties of materials, Lorentz Center, Leiden (Holland), February 28th, March 4th, 2005.

Mechanics of random and multiscale microstructures, organized by D. Jeulin and M. Ostija-Starzewski, CISM, Udine, 25-29 september 2000.

Méthodes d'homogénéisation en mécanique des matériaux, Ecole thématique du CNRS, Lalonde-les-Maures, 25 août-4 septembre 1998.

5 Contracts with industry and state

All PhD works are associated with an industrial financing contract with the partners mentioned earlier : SNECMA, RENAULT, ARCELOR-MITTAL, SAINT–GOBAIN, EDF, CEA, INCO Special Products, SAGEM, UNILEVER... These contracts are not listed here for brevity.

Contract CEA-DAM (Valduc), *Lifetime assessment of welded zones in a titanium alloy*, 2016–2019,

Contract ANR-15-CE08-0013 TITWIP, *New titanium alloys with a combination of high strength, strain hardening and high ductility, induced by TRIP and TWIP effects*, Chimie ParisTech (coordinator), ONERA-CNRS-LEM, Mines ParisTech, 2015–2019.

Contract ANR-14-CE07-0035-03 MICROMORFING (Défi "Stimuler le renouveau industriel"), Milieux Micromorphes: Modélisation multiphysique et Simulation Numérique Avancées de Procédés de Mise en Forme: UTT (coordinateur), UTC, Mines ParisTech, 2014–2019.

Contract ANR METAFORES (Programme blanc 2012), Matériaux à architecture élémentaire sur mesure pour réponse fonctionnelle optimisée : de l'expérience à la simulation, partenaires : PPRIME (coordinateur), CNRS UP Poitiers, PIMM ENSAM, CdM Mines ParisTech, 2012-2016.

PRC Structures chaudes, cas de la fissuration des aubes de turbines monocristallines, ONERA et SNECMA, 2009-2012.

Simulation de l'oxydation de l'acier 316L par la méthode des champs de phase, chaire EDF (2011-2014)

Fatigue of tantalum, Contrat CEA DAM (2010-2013)

CPR CNRS MAM, Matériaux Architecturés Multifonctionnels, partenaires : SIMAP (coordinateur), INSA Lyon, Arcelor Research, EDF Renardières, 2008–2011.

Contract ANR MANSART (Programme Matériaux et Procédés 2008), Matériaux sANdwicheS ARchiTecturés, partenaires : ONERA (coordinateur), MATEIS Lyon, Arcelor Research, ENSAIT toulouse, SIMAP Grenoble, AIRBUS, ATEAA, 2008-2012.

Contract ANR COUPHIN (Programme blanc 2008), Couplage entre champ de phases et plasticité cristalline continue, partenaires : Institut Jean Lamour (coordinateur), ONERA–LEM Paris, 2008-2012.

Contract ANR NANOCRYSTALS (Programme blanc 2007), Modélisation multiéchelles du comportement mécanique des nanocristaux métalliques, partenaires : GeorgiaTech Lorraine (coordinateur), LPMM Metz, 2007-2011.

Contract ANR CAT-SIZE (Programme Matériaux et Procédés 2007), Développement, application et validation d'une approche Multi–échelles incluant les effets de longueurs internes, partenaires : Arcelor Research (coordinateur), SIMAP Grenoble, LPMM Metz, 2008-2011.

Contract CEA–Saclay, Comportement mécanique des aciers ODS, 2009–2012.

Contract SNECMA, Simulation de la bifurcation de fissure par fatigue dans les monocristaux de superalliage, 2009–2012.

Contract EDF, Vieillissement statique et dynamique d'un acier C-Mn, 2008–2011.

Contract Michelin, Calcul de microstructures pour les élastomères chargés : influence du mélangeage, 2006–2009.

F. El Houdaigui, S. Forest, A.-F. Gourgues, *Propriétés effectives élastoplastiques d'une charnière multicristalline*, convention SAGEM-Armines, 2002–2004.

Programme Matériaux CNRS 2001, Approches multiéchelles des propriétés macroscopiques des matériaux de structure. Projet : *Comportement mécanique de composites à nano–renforts flexibles* (UMR 5010, 5510, 5301, 7633).

T. Kanit, S. Forest, V. Mounoury, D. Jeulin, *Determination of a representative volume element for random microstructures : application to waterice products*, convention Unilever-Armines, No. SRA1.3/PS00085, june 2000.

J. Olschewski, R. Sievert (Berlin), B. Svendsen (Dortmund), S. Forest (Evry), projet DFG (Deutsche Forschungsgemeinschaft) : Beschreibung des Verfestigungsverhaltens metallischer Werkstoffe unter dem Einfluss stark inhomogener Verformung zur Berechnung des Fortschritts makroskopisch grosser Risse unter zyklischer Belastung, 1999–2001.

6 European contracts

Marie Sklodowska-Curie Actions Research and Innovation Staff Exchange RISE project entitled FRAMED, *Fracture Across Scales and Materials, Processes and Disciplines* (H2020-MSCA-RISE-2016), coordinated by University of Sheffield. Partners: University of Erlangen Nuremberg, Mines ParisTech, Uppsala University, Aristotle University, Beijing University of Civil Engineering and Architecture, Nosov Magnitogorsk State Technical University, Perm National Research Polytechnic University, Politecnico di Torino, Aston University, Universitat fur Bodenkulter, Michigan Technological University, University of Arizona, Shanghi University, ITMO University, 2017-2021.

Marie Sklodowska-Curie Innovative Training Network ENABLE, *European Network for Alloys Behaviour Law Enhancement* (H2020-MSCA-ITN-2017, type of action: European Training Network), coordinated by Université de Bordeaux. Partners: Mines ParisTech, ENI Tarbes, Lulea Technical University, Universidad del Pais Vasco, Basque Center for Applied Mathematics, Fundacion Tecnalie Research & Innovation, Safran SA, Sirris Het Collectief Centrum van de Technologische Industrie, 2018-2022.

Marie Sklodowska Curie Action H2020-MSCA-IF-EF-ST entitled MIGRATE, *Cosserat phase field modelling and simulation of viscoplasticity induced grain boundary migration and recrystallisation in metallic polycrystals*, 2 year post-doc position for Anna Ask, 2016-2018.

FP7 European Project RADINTERFACES, *Multiscale Modelling and Materials by Design of interface-controlled Radiation Damage in Crystalline Materials*, Collaborative project Small or medium-scale focused Research Project, UMI-CNRS Georgia Tech Lorraine (coordinator, France-USA), University of Oviedo (Spain), Universidad Politecnica de Madrid (Spain), Ecole des Mines de Paris, ARMINES, Czech Technical University in Prague, Universita degli Studi di Cagliari (Italy), University of Tartu (Estonia), Uppsala University (Sweden), Instituto madrileno de estudios avanzados (Spain), Los Alamos National Laboratory (USA), 2011–2014.

Predictive methods for combined cycle fatigue in Gas Turbine Blades (6th RTD framework program), PREMECCY; Partners: Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Ecole Centrale de Paris, Mines ParisTech, Technische Universität Dresden, MTU Aero Engines Gmbh, Rolls-Royce Deutschland Ltd & Co KG, Avio S.P.A. (Italy), Politecnico di Milano Fundacion Inasmet, Industria de Turbo Propulsores, S.A. (Spain), Volvo Aero Corporation (Sweden) Siemens Industrial Turbomachinery Ltdh (UK). Coordination: Rolls-Royce PLC, Turbine Systems - Engineering (UK), 2006–2011.

Marie-Curie Research Training Network (RTN) entitled *SizeDepEn - Engineering mechanics based on size-dependent materials properties*, partners : Universität Karlsruhe (FRG), University of Edinburgh (UK),

Rijksuniversiteit Groningen, Fraunhoffer Institut für Werkstoffmechanik Freiburg (FRG), Eötvös University Budapest, contract No. MRTN-CT-2003-504634, 2004–2008.

Research Training Network (RTN) entitled *DEFINO – Deformation and fracture instabilities in novel materials and processes*, partners : Aristotle University Thessaloniki (Greece), University Cambridge (UK), Technical University Delft (The Netherlands), Technical University Braunschweig (FRG), University Libre Brussels (Belgique), Eötvös University Budapest, University Kaiserslautern (FRG), 2003–2007.

Competitive and Sustainable Growth Programme, European Project SOCRAX entitled *Expanding the limits of single crystal superalloys through short crack fracture mechanics analysis*, partners : ONERA (France), National Technical University of Athens (Greece), SNECMA Moteurs (France), Siemens Power Generation (FRG), MTU Aero Engines GmbH (FRG), Imperial College of Science, Technology and Medicine (UK), Bundesanstalt für Materialforschung und -prüfung (FRG), Consiglio Nazionale delle Ricerche (Italy), Institute of Mechanics of Materials and Geostructures S.A. (Greece), contract No. G5RD–CT–2002–00819, 2002–2006.

7 Committees and evaluation

Elected Member of the IUTAM Congress Committee for the preparation of the ICTAM events (2020–...).

Member of the Industrial Engineering panel, chaired by V. Tverggard, of the Research Quality Evaluation (RQ20) at the Lund University (May 4–8 2020).

Member (2020-2025) and Co-chairman (2022–2026) of the European Solid Mechanics Conference Committee, chaired by Prof. G. Holzapfel.

Representative of France at the General Assembly of the International Union of Theoretical and Applied Mechanics (IUTAM, 2018–...).

- General Assembly Meeting Zoom meeting due to the COVID emergency, 22-25 August 2021 (ICTAM 2020+1Virtual)
- General Assembly Meeting at Northeastern University, Boston, Massachussetts 23-24 July 2018
- General Assembly Meeting Zoom meeting due to the COVID emergency, 25-26 August 2020

CNFM Member (Comité National Français de Mécanique) interfacing IUTAM and the French Mechanics Community (2013–...).

Member of the EMMC committee (European Mechanics of Materials Conference) of the Euromech society (2010–2018).

Member of the organizing committee IMMC (International Material Modeling Conference) lead by Prof. A. Bertram: ICMM1, Dortmund (2009); ICMM2, Paris (2011), Varsaw (2013), Berkeley (2015), Rome (2017), Lund (2019).

Member of evaluation committee at HCERES (French Evaluation Committee), DFG (Germany), Swedish Research Council.

Member of jury of the Pierre Bezier Prize (for Arts et Métiers best PhD works)), and the Jean Mandel Prize (for French outstanding researchers younger than 40).

Member of the research committee “Multiscale Material Modelling” of the German Society of Applied Mathematics and Mechanics (GAMM), 2006–2009.

Member of the Board of Directors of the association MECAMAT for the development of the mechanics of materials 1998–2006.

8 Review of articles in international journals

Acta Materialia	10
Acta Mechanica	14
Advanced Modeling and Simulation in Engineering Sciences	2
Aerospace Science and Technology	1
Archive of Applied Mechanics	42
Archives of Mechanics	2
ASCE Journal of Engineering Mechanics	2
ASME Journal of Engineering Materials and Technology	2
Biomechanics and Modeling in Mechanobiology	2
Comptes Rendus à l'Académie des Sciences	14
Composite Structures	6
Composites Science and Technology	2
Computational Materials Science	27
Computational Mechanics	6
Computer Methods in Applied Mechanics and Engineering	23
Computers and Structures	4
Continuum Mechanics and Thermodynamics	29
European Journal of Mechanics A/ Solids	40
Engineering Fracture Mechanics	5
Experimental Mechanics	1
Extreme Mechanics Letters	2
The European Physical Journal Applied Physics	2
International Journal of Engineering Science	6
International Journal of Damage Mechanics	9
International Journal of Fatigue	2
International Journal of Forming Processes	1
International Journal of Fracture	4
International Journal of Mechanical Sciences	7
International Journal for Multi–scale Computational Engineering	2
International Journal of Non–Linear Mechanics	4
International Journal for Numerical Methods in Engineering	18
International Journal of Plasticity	74
International Journal of Solids and Structures	101
International Journal of Vehicle Design	1
Journal of Alloys and Compounds	3
Journal of Applied Mechanics	5
Journal of Elasticity	4
Journal of Engineering Manufacture	2
Journal of Materials Research	2
Journal of Materials Science	6
Journal of the Mechanics and Physics of Solids	34
Journal of the Mechanics of Materials and Structures	3
Journal of Micromechanics and Microengineering	3
Journal of Multiscale Computational Engineering	2
Journal of Nuclear Materials	2
Journal of Physics A: Mathematical and General	2

Journal de Physique IV	6
Materials & design	1
Materials at High Temperatures	1
Materials Science and Engineering A	7
Mathematics and Mechanics of Solids	6
Meccanica	7
Mechanics of Materials	15
Mechanics Research Communications	3
Metallurgical and Materials Transactions A	4
Mécanique et Industries	4
Modelling and Simulation in Materials Science and Engineering	17
Nature	1
Nuclear Engineering and Design	1
Philosophical Magazine	21
Philosophical Magazine Letters	5
Polymer	1
Probabilistic Engineering Mechanics	2
Proceedings A of the Royal Society	10
Progress in Materials Science	1
Revue de Métallurgie	2
Scripta Materialia	9
Smart Materials and Structures	1
Strain	1
Technische Mechanik	8
Zentralblatt Mathematik	5
Zeitschrift fuer Angewandte Mathematik unf Mechanik	6