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**Education**

Doctor of Science (DSc), University of Paris VI (1987)
PhD in Mechanics of Materials (Mécanique Appliquée à la Construction), University of Paris VI, Prof. Jean Lemaitre (1979)
DEA en Mécanique Appliquée à la Construction, Université de Paris VI, Prof. Paul Germain (1976)
Civil Engineering Diploma, Ecole Centrale de Paris (1975)
Ecole Centrale de Paris (rank 5th/330) (1972)

**Professional Experience :**

01/2007 – present : Director, CNRS UMR 7633, Centre des Matériaux
10/1994 – present : 1st class Professor, Ecole des Mines de Paris
04/1984 – 10/1994 : 2nd class Professor, Ecole des Mines de Paris
09/1978 – 04/1984 : Research Engineer, ONERA, Direction des Structures

**Professional Service :**

Member of MecaMat (French group of Mecanics of Materials), SF2M (French Society of Metallurgy and Material, AFM (French Society of Mechanical Science), Euromech (European Mechanics Society)
Editorial Board member of *Mécanique et Industrie*
Editorial Board member and Guest Editor of the *International Journal of Plasticity*
International Advisory Board member, Network of Excellence KMM (Knowledge Base Multicomponents Material for Durable and Safe Performance) (2004–2008)
Scientific Committee member, Research Training Network WEMESURF (Characterisation of WEar MEchanisms and SURFace functionalities with regard to life time prediction and quality criteria - from micro to the nano range)
Scientific Committee member at ONERA (Office National d'Etudes et Recherches Aérospatiales) (2004-present)

**Workshop and Conference Organisation (Last Five Years) :**

Co-chair, 7th International Conference of Assesment of reliability of materials and structures, Saint-Petersburg, june 17–20, 2008 (with Prof. Melnikov)
Co-chair, Workshop S3 on *Intensive Computations* at Conférence Française de Mécanique, CFM 2007, Grenoble, (France), august 23–31, 2007 (with Prof. C. Rey and E. Serre))
Co-chair, IWCMM17 (17th International Workshop on Computational Mechanics of Materials), Paris, France, august 22–24, 2007 (with S. Forest and Prof. S. Schmauder)
Co-chair, Workshop on *Multiaxial Fatigue* at International Symposium on Plasticity, june 2006, Halifax, Canada
European chair, EU-India Workshop on Computational Materials Sciences, Bangalore, India, february

22-24, 2006
Co-chair, 6th International Conference of Assesment of reliability of materials and structures, Saint-Petersburg, june 13–16, 2005 (with Prof. Melnikov)
Co-chair, Euromech Advanced Methods in Validation and Identification of Nonlinear Constitutive Equations in Solid Mechanics, Moscow, sept. 21–23, 2004 (with Prof. R.A. Vasin)

**Invited Courses (Last Five Years) :**
Invited speaker (3 courses) at IIT Bangalore (India), october 15–17, 2008
Invited speaker (5 courses) at CISM Summer School *Multi Scale Modelling of Plasticity and Fracture*, Udine (Italy), july 4–8, 2005
Invited speaker (3 courses) at Idea-League Summer School *Multiscale Modelling in Materials Science and Engineering*, Eifel Mountains (Germany), july 23–28, 2007
Invited speaker (3 courses) at CNRS Workshop *PlastOx (Mécanismes et Mécanique des Interactions Plasticité - Environnement)*, Argelès-sur-Mer (France), may 19–25, 2007
Invited speaker (1 course) at CEA–EDF–INRIA Summer School *Méthodes multiéchelles en science des matériaux*, Port-Royal (France), june 25–july 5, 2007
Invited speaker (9 courses) at Trollhättan University (Sweden), october 21–23, 2003

**Teaching Interest :**
Creation of the web site http ://mms2.ensmp.fr
In charge of the course *Mechanics of Solid Materials* , Ecole des Mines de Paris (starting in 1993).
In charge of the course *Finite elements*, Ecole des Mines de Paris (2003–2006).

**Research Interest :**
*Model development* : Plasticity and viscoplasticity theories, thermomechanical fatigue, crystal plasticity, brittle failure, creep–fatigue failure. Development of new model classes, at the macroscale (multipotential models), and in the micro-macro framework (self-consistent approach for polycrystals). *Numerical studies* : FE code, integration procedures for highly non linear models, development of a FE code. management of ZébuLoN project, and code development. *Experimental studies* : Multiaxial fatigue, cyclic tests.

*Thesis advisor for 37 PhD* at Centre des Matériaux de l'Ecole des Mines de Paris between 1988 and 2007. The current thesis subjects (in july 2008) are :

- Field measurements and crystal plasticity
- Multiscale study of the behaviour and failure of bainitic steels
- Numerical simulation of laser direct deposition
- Multiscale modeling of recrystallisation in metals
- Development of a phase field method in a finite element code
- Prediction of crack initiation in random multiaxial fatigue
- Failure of the irradiated bainitic steels
- Study of short crack propagation in polycrystalline aggregates
- Contact algorithm for parallel computations

*Author and co-author* of 100 scientific papers ; 160 communications ; one book (with J. Besson, S. Forest, J.-L. Chaboche), *Mécanique non linéaire des Matériaux*, Hermès, 2001 – English translation in 2009 (Springer Verlag)

## Reviewed Articles (Last Five Years)


[1] A. Musienko, A. Tatschl, K. Schmidegg, O. Kolednik, R. Pippan, and G. Cailletaud. 3D finite element simulation of a polycrystalline copper specimen. *Acta Mat.*, 55 :4121–4136, 2007.

[2] M. Cheikh, S. Quilici, and G. Cailletaud. Presentation of ki-cof, a phenomenological model of variable friction in fretting contact. *Wear*, 262 :914–924, 2007.

[3] K. Sai and Cailletaud. Multi-mechanism models for the description of ratchetting : Effect of the scale transition rule and of the coupling between hardening variables. *Int. J. of Plasticity*, 23 :1589–1617, 2007.

[4] D. Kempf, V. Vignal, G. Cailletaud, R. Oltra, J.C. Weeber, and E. Finot. High spatial resolution strain measurements at the surface of duplex stainless steels. *Philosophical Magazine*, 87 :1379–1399, 2007.

[5] F. Cacho, S. Orain, G. Cailletaud, and H. Jaouen. A constitutive single crystal model for the silicon mechanical behavior : Applications to the stress induced by silicided lines and sti in mos technologies. *Microelectronics and Reliability*, 47 :161–167, 2007.

[6] S. Leclercq, G. Rousselier, and G. Cailletaud. A generic method for modeling the behavior of anisotropic metallic materials : application to recrystallized zirconium alloys. *Mech. of Materials*, 39 :458–472, 2007.

[7] F. Cacho, G. Cailletaud, C. Rivero, P. Gergaud, O. Thomas, and H. Jaouen. Numerical modeling of stress build up during nickel silicidation under anisothermal annealing. *Material Science and Engineering B*, 135 :95–102, 2006.

[8] J. Da Costa Texeira, B. Appolaire, E. Aeby-Gautier, S. Denis, and G. Cailletaud. Transformation kinetics and microstructures of Ti17 titanium alloy during continuous cooling. *Material Science and Engineering A*, 448 :135–145, 2007.

[9] N. Saintier, G. Cailletaud, and R. Piques. Multiaxial fatigue life prediction for a natural rubber. *Int. J. Fatigue*, 28 :530–539, 2006.

[10] T. Dick, C. Paulin, G. Cailletaud, and S. Fouvry. Experimental and numerical analysis of local and global plastic behaviour in fretting wear. *Tribology International*, 39 :1036–1044, 2006.

[11] L. Taleb, G. Cailletaud, and L. Blaj. Numerical simulation of complex ratcheting tests with a multi-mechanism model type. *Int. J. of Plasticity*, 22 :724–753, 2006.

[12] T. Dick and G. Cailletaud. Analytic and FE based estimations of the coefficient of friction of composite surfaces. *Wear*, 260 :1305–1316, 2006.

[13] T. Dick and G. Cailletaud. Fretting modelling with a crystal plasticity model of Ti6Al4V. *Computational Materials Science*, 38 :113–125, 2006.

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

[15] N. Saintier, G. Cailletaud, and R. Piques. Crack initiation and propagation under multiaxial fatigue in a natural rubber. *Int. J. Fatigue*, 28 :61–72, 2006.

[16] E. Busso and G. Cailletaud. On the selection of active slip systems in crystal plasticity. *Int. J. of Plasticity*, 21 :2212–2231, 2005.

[17] O. Diard, S. Leclercq, G. Rousselier, and G. Cailletaud. Evaluation of finite element based analysis of 3d multicrystalline aggregates plasticity : Application to crystal plasticity model identification and the study of stress and strain fields near grain boundaries. *Int. J. of Plasticity*, 21 :691–722, 2005.

[18] K. Saï, V. Aubourg, G. Cailletaud, and J.-L. Strudel. Physical basis for model with various inelastic mechanisms for nickel base superalloy. *Material Science and Technology*, 20 :747–755, 2004.

[19] S. Flouriot, S. Forest, G. Cailletaud, A. Köster, L. Rémy, B. Burgardt, V. Gros, and J. Mosset, S. 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. *Int. J. Frac*, 124 :43–77, 2003.

[20] 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.