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Sandrine THUILLIER
Professor in Mechanical Engineering
Gender: female
Date of birth: 29 October 1966 - French nationality

Diplomas

November 1992 **PhD of the National Polytechnic Institute of Grenoble**
Material Science and Engineering

November 2008 **Habilitation à Diriger des Recherches** (HDR) - University of South Brittany
French diploma to become professor (no English translation)

Career

1993 – 1994 **Professor** - University of South Brittany

January to July 2001 **Research leave** - University of Coimbra (Portugal)
Grant from the Brittany region

2007-2009 **Research leave** - LaMCoS (National Institute of Applied Sciences in Lyon - France)
National Center for Scientific Research (CNRS)

Since 2009 **Professor** - University of South Brittany
Award from the French government for excellence in research

January to August 2012 **Research leave** - Swinburne University of Technology (Melbourne, Australia)
Grant from SUT

Summary of teaching activities

As both a researcher and senior lecturer, I teach an average of 192 hours per year, at levels ranking from undergaduate up to master/PhD degree.

1. Undergraduate (bachelor's degree): mathematics, fluid and solid mechanics, material properties, numerical analysis
2. Postgraduate: modeling of material mechanical behavior, numerical simulation of forming processes, strain measure by digital image correlation
3. Since 2009, head of a professional bachelor degree in Thermal Engineering: 24 students, management of the studies and administrative tasks

4. Since 2012, member of the executive committee of the Doctoral School SICMA: public PhD grant management, PhD student welfare and training

Summary of research activities

Experimental characterization and numerical prediction of mechanical behavior f materials at room temperature. Such a prediction is performed both with a phenomenological approach and within a micromechanical framework, for metallic sheets, elastomers and thermoplastic elastomers. Elasto-visco-plastic anisotropic behavior is characterized in tension, simple shear, hydraulic bulging and œdometric compression, in order to investigate different strain paths. Inverse identification is performed to determine material parameters that are input data to finite element simulation of forming processes and static loading during service.

PhD supervision

1. From 2000 to 2010, 4 co-supervisions of PhD students
2. Current supervisions: A. Mishra (2013), C.H. Pham (2014), N. Souto (2014), S. Zhang (2014)

Post-doc, foreign student

1. November 2008 - October 2009: Dr. Shunlai Zang, post-doc from Xi'an University (China)
2. 3 months in 2003: welcoming in LIMATB of A. Andrade-Campos, PhD student at University of Aveiro (Portugal)
3. 2 months in 2010: welcoming in LIMATB of R. Carvalho da Silva, PhD student at University of Aveiro (Portugal)
4. 2 months in 2012: welcoming in LIMATB of S. Y. Kim, PhD student at Swinburne University of Technology (Australia)

Industrial research. 9 different contracts since 2004 for an average amount of 20000 euros each.

Academic projects

- 2007-2010: co-responsible of a national project for the numerical prediction and experimental validation of surface defects in deep-drawing (head of a team composed of 3 engineers, 1 researcher from China)
- 2010-2013: chief of a national project on the prediction of forming limits in bending (SIMENDO, with financial support from the French National Agency for Research/ANR) - 3 academic partners and 2 industrial partners
- 2012-2013: PHC-PESSOA (financial support from France and Portugal), joint research project with the University of Aveiro, Portugal

Member of PhD/HDR jurys

- 2007 B. Chaparro, PhD - University of Coimbra (Portugal)
- 2009 I. Zidane, PhD - National Institute of Applied Sciences in Rennes (France) reviewer
- 2010 F. Morestin, HDR - National Institute of Applied Sciences in Lyon (France) reviewer

- 2010 S. Ramde, PhD - University of Toulouse (France) president
- 2011 D. Rèche, PhD - University of Paris VI (France) president
- 2011 C. Luis, PhD - University of Paris 13 (France) reviewer
- 2011 J. Chottin, PhD - University of Caen/Basse Normandie (France) reviewer
- 2011 B. Bassa, PhD - National Institute of Applied Sciences in Lyon (France) reviewer
- 2012 P. Balland HDR - Université de Savoie, Annecy, France) reviewer
- 2012 R. Carvalho da Silva - Universidade de Aveiro (Portugal) reviewer
- 2013 A. Oueslati, ENS Cachan, Paris (France) reviewer
- 2013 X. Chu, INSA Rennes (France)
- 2013 M. Safaei, Gent University (Belgium)

Reviewer

- Since 2006, reviewer for Journal of Materials Processing Technology, Computational Materials Science, Composites Part A, Polymer Engineering and Science, International Journal of Plasticity, International Journal of Solids and Structures, International Journal of Advanced Manufacturing Technology (25 articles)
- Reviewer for european research projects: Technology Foundation STW from the Netherlands (April 2010), Agence Nationale pour la Recherche/National Agency for Research (2010), Polish Foundation of Science (2011)
- 2011-2012: expert for the French Evaluation Agency for Research and Higher Education (AERES http://www.aeres-evaluation.com/)
- Member of Esaform Scientific Committee (2012-2013)
- Co-organizer of a symposium at Esaform 2013 (Aveiro, Portugal): Integrated design, modeling and reliability assessment in forming
- Member of Numisheet 2014 Scientific Committee

References

Co-author of 35 articles in peer-reviewed international journals and 35 papers presented at international conferences. Full references in the time span 2009-2013 are given below.

Journals with peer review (2009-2013)

[1] S. Thuillier, P.Y. Manach, Comparison of the work-hardening of metallic sheets using tensile and shear strain paths, *International Journal of Plasticity* 25 (2009) 733-751

[2] J. Carbonnière, S. Thuillier, F. Sabourin, M. Brunet, P.Y. Manach, Comparison of the work hardening of metallic sheets in bending-unbending and simple shear, *International Journal of Mechanical Sciences* 51 (2009) 122-130

[3] H. Laurent, R. Grèze, P.Y. Manach, S. Thuillier, Influence of constitutive model in springback prediction using the split-ring test, *International Journal of Mechanical Sciences* 51 (2009) 233-245

[4] N. Le Maoût, S. Thuillier, P.Y. Manach, Aluminum alloy damage evolution for different strain paths - Application to hemming process, *Engineering Fracture Mechanics* 76 (2009) 1202-1214

[5] S. Thuillier, P.Y. Manach, L.F. Menezes, Occurence of strain path changes in a two-stage deep drawing process, *Journal of Materials Processing Technology* 210 (2010) 226-232

[6] N. Le Maoût, S. Thuillier, P.Y. Manach, Classical and roll-hemming processes of pre-strained metallic sheets, *Experimental Mechanics* 50 (2010) 1087-1097

[7] A. Le Port, S. Thuillier, P.Y. Manach, Occurrence and numerical prediction of surface defects during flanging of metallic sheets, *International Journal of Material Forming* 3 (2010) 215-223

[8] N. Le Maoût, S. Thuillier, P.Y. Manach, Drawing, flanging and hemming of metallic thin sheets: a multi-step process, *Materials and Design* 31 (2010) 2725-2736

[9] R. Grèze, P.Y. Manach, H. Laurent, S. Thuillier, L.F. Menezes, Influence of the temperature on residual stresses and springback effect in an aluminium alloy, *International Journal of Mechanical Sciences* 52 (2010) 1094-1100

[10] S. Thuillier, N. Le Maoût, P.Y. Manach, Bending Limit Prediction of an Aluminum Thin Sheet, DOI 10.1007/s12289-010-0747-7 vol. 3 suppl.1:223-226 *International Journal of Material Forming* (2010)

[11] J. Coër, C. Bernard, H. Laurent, A. Andrade-Campos, S. Thuillier, The effect of temperature on anisotropy properties of an aluminium alloy, *Experimental Mechanics* 51 (2011) 1185-1195

[12] S. Thuillier, N. Le Maoût, P.Y. Manach, Influence of ductile damage on the bending behaviour of aluminium alloy thin sheets, *Materials and Design* 32 (2011) 2049-2057

[13] S.L. Zhang, S. Thuillier, A. Le Port, P.Y. Manach, Prediction of the anisotropy and hardening of metallic sheets in tension, simple shear and biaxial tension, *International Journal of Mechanical Sciences* 53 (2011) 338-347

[14] S.L. Zhang, C. Guoa, S. Thuillier, M.G. Lee, A model of one-surface cyclic plasticity and its application to springback prediction, *International Journal of Mechanical Sciences* 53 (2011) 425-435

[15] P.Y. Manach, S. Thuillier, Investigation of springback of metallic sheets at small strains, *Strain* 48 (2012) 216-224

[16] A. Le Port, S. Thuillier, P.Y. Manach, Characterization of surface defects after flanging of metallic sheets, *Journal of Materials Processing Technology* 211 (2011) 2062-2071

[17] N. Le Maoût, P.Y. Manach, S. Thuillier, Influence of prestrain on the numerical simulation of the roller hemming process, *Journal of Materials Processing Technology* 212 (2012) 450-457

[18] S. Thuillier, E. Maire, M. Brunet, Ductile damage in aluminium alloy thin sheets: correlation between micro-tomography observations and mechanical modelling, *Materials Science and Engineering A* 558 (2012) 217-225

[19] A. Kacem, A. Krichen, P.Y. Manach, S. Thuillier, Y.W. Yoon, Damage prediction in the hole-flanging process of aluminium alloys, *Fracture Engineering Mechanics* (2013) http://dx.doi.org/10.1016/j.engfracmech.2012.12.018

[20] B. Revil-Baudard, O. Cazacu, S. Thuillier, E. Maire, Effect of stress triaxiality on porosity evolution in notched bars: Quantitative agreement between a recent dilatational model and X-ray tomography data, *Mechanics Research Communications* (2013) http://dx.doi.org/10.1016/j.mechrescom.2013.04.005

International conferences (2009-2013)

[C1] S. Thuillier, N. Le Maoût, P. Y. Manach, Bending Limit Prediction of an Aluminum Thin Sheet, *Proceedings of 13th Esaform conference*, Brescia (Italy), 7-9 avril (2010)

[C2] P. Y. Manach, N. Le Maoût, S. Thuillier, A multi-step assembly process: drawing, flanging and hemming of metallic sheets, *Proceedings of ICEM 14*, Poitiers (France), 4-9 juillet (2010)

[C3] A. Le Port, S. Thuillier, P. Y. Manach, J. Garabed, Experimental study of surface defects on automotive doors during flanging and their numerical prediction, *Proceedings of ICEM 14*, Poitiers (France), 4-9 juillet (2010)

[C4] A. Le Port, S. Thuillier, P. Y. Manach, Surface defects on thin sheets after flanging, *Advances in Materials and Processing Technologies AMPT*, Paris (France), 24-27 octobre (2010)

[C5] A. Mishra, C. Leguen, S. Thuillier and E. Maire Investigation of Ductile Damage in DP980 Steel Sheets Using Mechanical Tests and X-ray Micro-Tomography *Proceedings of 14th Esaform conference*, Belfast (Irlande du Nord), 27-29 avril (2011)

[C6] S. Thuillier, A. Le Port, P. Y. Manach, Surface Defects in Sheet Metal Forming: a Simulative Laboratory Device and Comparison with FE Analysis *8th International Conference and Workshop on Numerical Simulation of 3D Sheet Metal Forming Processes Numisheet2011*, Séoul (Corée), 22-26 août (2011)
Keynote

[C7] A. Le Port, S. Thuillier, C. Borot, J. Charbonneaux, Aethra Automotive Systems Analysis, Simulation and Prediction of Cosmetic Defects on Automotive External Panel *8th International Conference and Workshop on Numerical Simulation of 3D Sheet Metal Forming Processes Numisheet2011*, Séoul (Corée), 22-26 août (2011)

[C8] P.Y. Manach, J.W. Yoon, S. Thuillier, J. Coër, H. Laurent Kinematics of Portevin-Le Châtelier bands in simple shear, *Plasticity'13*, Nassau (Bahamas) 3-8 janvier 2013

[C9] S. Thuillier, J.W. Yoon, P.Y. Manach, A. Mishra, Macroscopic rupture criterion for metallic sheets under various strain paths, *Plasticity'13*, Nassau (Bahamas) 3-8 janvier 2013
Keynote

[C10] S. Zhang, L. Léotoing, D. Guines, S. Thuillier, Calibration of material parameters of anisotropic yield criterion with conventional tests and biaxial test, *Esaform 2013*, Aveiro (Portugal) avril 2013

[C11] N. Souto, A. G. Andrade-Campos, S. Thuillier, Shape optimization of the conventional simple shear specimen, *Esaform 2013*, Aveiro (Portugal) avril 2013

[C12] J. Troufflard, G. Requena, S. Thuillier, E. Maire Ductile damage in tension and bending for DP980 steel sheets, *Esaform 2013*, Aveiro (Portugal) avril 2013