

Thomas Sourmail: CV

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network modelling of mechanical properties. The project also includes the experimental study of aged NF709 (TEM, SEM, *etc.*)

Austempered ductile iron (6 months project): experimental study of the bainite formation in ADI.

Education

University of Cambridge, 2002–, *Research assistant* in the Department of Materials Science and Metallurgy, same group.

University of Cambridge, 1998-2002, *PhD research student*, working with Prof. H.K.D.H. Bhadeshia (FRS, FEng) on the theory of simultaneous transformations in certain steels.

EUDIL (Ecole Universitaire D'ingénieurs de Lille, France), 1995-1998. *Diplôme d'ingénieur* (equivalent of an M.Phil.), specialisation in materials science, best student.

USTL (Université des sciences et technologies de Lille), 1997-1998 *D.E.A (Diplôme d'Etudes Approfondies)* (in parallel with above degree), in solid state physics, best student.

Work experience/Research projects

Recent activities: I have been participating in a number of projects related to phase transformations in alloys and impact on physical properties: design of low losses Fe-Co alloys with Rolls-Royce, modelling gamma-prime precipitation in Ni-based superalloys, and modelling microstructural evolution in the vicinity of TBC (thermal barrier coating) in superalloys gas turbine blades.

Last year, I designed and implemented a model for complex diffusion phenomena in turbine blades, for Innogy Plc. This was delivered in the form of a computer ready to use and is now routinely exploited by Innogy Plc.

PhD project: physical modelling of precipitation sequences in austenitic stainless steels, accounting for multiphase, multicomponent effects; neural

Teaching

I have extensive teaching experience, ranging from IA supervision to lecturing Bayesian inference and neural networks to MPhil students in the department of Materials Science and Metallurgy.

I have also created web tutorials for MT-DATA (www.msm.cam.ac.uk/phase-trans/mtdata), for a neural network software (www.msm.cam.ac.uk/phase-trans/2001/mm_doc/) and various additional web-based teaching documents (www.thomas-sourmail.org).

Technical skills and competences

During my PhD and subsequent research, I have accumulated in-depth knowledge on the physical metallurgy of a variety of alloys (steels, Ni-based superalloys, Fe-Co alloys and soft-magnetic alloys). I also have experience in a variety of modelling techniques, in particular, I am recognised as the in-house expert on thermodynamic calculation tools (MTDATA).

Competent experimenter (TEM (conventional, EDX, EFTEM), SEM, X-ray diffraction, *etc.*) I have worked as a consultant to perform TEM microstructural investigation and resolve a commercial dispute.

Computer enthusiast, I have developed a number of applications to predict microstructure and mechanical properties, some of which have been commercialised.

Awards

Best student each year, and overall, for my two degrees in materials science and solid state physics. Both degrees with the highest distinction ('mention Très Bien').

Institute of Materials prize for my literature review, subsequently published.

Publications

International refereed journals:

T. Sourmail and H. K. D. H. Bhadeshia, Microstructural evolution of two variants of NF709 during ageing at 1023 and 1073 K, *Metall. Mater. Trans. A*, in press.

T. Sourmail, Evolution of strength and coercivity during annealing of FeCo based alloys, *Scripta Mater.*, 2004:51, p589-591.

T. Sourmail, T. Okuda and J. E. Taylor, Formation of chromium borides in quenched modified 310 austenitic stainless steel, *Scripta Mater.*, 2004:50, p1271-1276.

M. Sherif, C. Garcia-Mateo, T. Sourmail and H.K.D.H. Bhadeshia, Stability of retained austenite in TRIP-assisted steels, *Mater. Sci. Techn.*, 2004:20, p319-322.

H. K. D. H. Bhadeshia and T. Sourmail, Design of creep-resistant steels: success and failure of models, *Japan Society for the Promotion of Science*, 2003:44, p299-314.

T. Sourmail and H.K.D.H. Bhadeshia, Modelling simultaneous precipitation reactions in austenitic stainless steels, *CALPHAD*, 2003:27, p169-175.

T. Sourmail, C. H. Too and H.K.D.H. Bhadeshia, Sensitisation and Evolution of Chromium-depleted Zones in Fe-Cr-Ni-C systems, *ISIJ Int.*, 2003:11, p1814.

F. Tancret, T. Sourmail, M.A. Yescas, et al, Design of a creep-resistant nickel-base superalloy for power-plant applications. Part III: experimental results. *Mat. Sci. and Techn.*, 2003:19, p297-302.

T. Sourmail, H.K.D.H. Bhadeshia and D.J.C. MacKay, A neural network model of the creep strength of austenitic stainless steels, *Mat. Sci. and Techn.*, 2002:18, p655-663.

T. Sourmail, Precipitation in creep-resistant austenitic stainless steels, *Mat. Sci. and Techn.*,

2001:17, p1-14.

In review

T. Sourmail, Near equiatomic FeCo alloys: constitution, mechanical and magnetic properties, submitted to *Prog. Mater. Sci.*

T. Sourmail and C. G. Mateo, Critical assessment of models for predicting the Ms temperature of steels, submitted to *Comp. Mater. Sci.*

T. Sourmail and C. G. Mateo, A model for predicting the Ms temperature of steels, submitted to *Comp. Mater. Sci.*

T. Sourmail, Comments on 'Character of transformations in Fe-Co system', submitted to *Scripta Mater.*

Software:

Extensive software and data published on MAP (Materials algorithms project) (<http://www.msm.cam.ac.uk/map/>).

Other skills and activities

Consultancy, in 2003, giving expert opinion in a commercial dispute regarding precipitation in steel for use in highly corrosive environment, I was also asked to undertake microstructural investigation.

Foundation, in 2003, of MAP-online (Materials Algorithm Project online, <http://www-map-online.cam.ac.uk>), with the aim of facilitating the exchange, review and use of models by researchers and industrials.

Foundation in 2000, with S. L. Harsha, of Neumat Ltd, creation of graphical user interfaces for existing physical and empirical models, offers on demand creation of neural network models. Our software has been sold internationally.

Computer skills: FORTRAN, C, Tcl/Tk. Experienced Linux system administrator, some knowledge of UNIX (Solaris) and NT administration. Web authoring (familiar with HTML and Javascript, PHP scripting), knowledge of SQL (MySQL): the various pages I have created can be accessed from <http://www.thomas-sourmail.org>.

Languages: french, fluent in english; I also read and understand italian, and speak it to a lesser extent, I have some good basis in german.

Sports: rowing, running, and trekking. 5th kyu Shotokan Karate.