

Emmanuel CINI

**Senior Materials Scientist
Research Team Leader**



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 Emmanuel CINI HdF

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Valenciennes, France



Profile

Senior metallurgist in R&D centers of major leading groups in Energy, Steel & Mining, Defense and Mechanical industries

Objective

Bring my energy and experience to innovative materials projects, as researcher and/or principal investigator

Competences

Characterize, model and design new materials & tests
Perform scientific and technical surveys
Manage and motivate multi-disciplinary teams
Build up and lead complex research projects
Contribute to scientific recognition

Skills

Intellectual curiosity, assimilative capacity
Search for excellence
Creative thinking leading to innovative approaches
Communication based on listening and arguing
Capacity to challenge academic experts

Work Experience

- 2017**
CETIM **Research Manager - Processes and Materials** *Senlis*
Scientific orientation and budgetary monitoring of the Metallic Materials and Surfaces division
Animated and managed technical commissions for industry and professional organizations (eg. metal hardware and furniture, springs, fasteners/fixings, forging)
Collaborated with Strategic Intelligence, Innovation and Valorization services
- 2013-2016**
VALLOUREC **Head of Materials Modeling section** *VRCF, Aulnoye-Aymeries*
Technical and commercial partnerships in France (CEA/EDF theses) and Europe (ICAMS, Tubacex)
Lead scientist for multi-scale, physics-based modeling of creep and FEM simulation of hydrogen embrittlement of chromium martensitic steels (Abaqus®, Isight®)
Certified trainer for Vallourec University
- 2010-2013**
Head of Creep section
Team manager (3 tech., 2 ing. + consultants & internships)
In charge of creep facility (100 testing positions) and activity (quality standards + internal R&D)
Designed new steel grades for boiler components (Thermo-Calc® + TEM, EBSD), used a Figure Of Merit (FOM) approach, created and validated a new « one shot » recrystallization test
- 2008-2010**
Metallurgy R&D Project leader
Developed innovative experimental method for creep testing (nano-indentation + relaxation)
Applied *Materials by Design* approach for selecting steel strengthening precipitates via Ab Initio techniques
- 2006**
PLANSEE **R&D Project leader** *CIME BOCUZE, St Pierre en Faucigny*
Powder metallurgy of tungsten alloys
Optimized withdrawal during sintering to get a higher yield
- 2000-2005**
ORANO **Project leader** *CEZUS, CRC, Ugine*
Metallurgy of zirconium alloys, from ores to tubes
Expertise on hot extrusion and lubrication, developed a laboratory press for high temperature plastic deformation and microstructure evolution (Zy-4), surface pickling and residues analysis (M5®-ZrNb1)
Supported multi-party research project dedicated to numerical simulation of forming processes (SimulForge)
Managed a small team (2 tech., 1 ing.), supervised a corrosion test line (equipment and procedures)
- 1997-2000**
**ARCELOR
MITTAL** **Research engineer** *IRSID, Maizières-les-Metz*
Physico-chemical modeling of refractories for continuous casting, thermodynamic models for molten steel, Microstructural characterizations and expertise of defective parts (failure/fracture analysis + corrosion)
Supervised technicians and trainees
- 1995-1997**
CEA **Research associate** *CEREM, Grenoble*
Finalization of doctoral thesis, extension of theoretical part: bibliographic survey on grain refinement phenomena. Completion of Ph.D. at the Institut National Polytechnique de Grenoble (INPG)

Work Experience

- 1994-1995** **International Volunteer in Business** *Air Liquide Laboratories, Tsukuba (Japan)*
AIR LIQUIDE Volunteered for National Service in an industrial research laboratory out of France
 Non destructive testing of welding beads (TIG), comparative study on corrosion behaviour of tubing materials (stainless steels, Nickel-base alloys) against electronics specialty gases (HBr...)
- 1991-1994** **Doctoral research fellow** *Grenoble*
CNES Experimental part of Ph.D. thesis: exploratory research on the solidification behaviour and microstructure of refractory alloys (W-Re-Ta-Nb...) elaborated under microgravity and ultra-high vacuum conditions in a 50m high drop tube / theoretical part: thermodynamic analysis of phase transitions through nucleation and spinodal decomposition (unmixing)

Education

- 1997** **Doctor of Philosophy** *Institut National Polytechnique, Grenoble*
Grenoble INP Materials Science and Engineering, co-funded by CEA and CNES
- 1991** **Engineer** *École Nationale Supérieure de Physique, Grenoble*
Phelma Physicist, Materials

Languages

- French** Mother tongue
English Bilingual (Cambridge Certificate in Advanced English - Grade A)
German Non technical communication
Italian Beginner to intermediate level
Spanish Beginner
Japanese Beginner

Communication

- Publications** More than ten articles in international scientific reviews and proceedings
- Teaching** In charge of internal training dedicated to *Steels for PowerGen applications-Tubes & Pipes*, as part of the *Metallurgy Seminar* given at Vallourec Research Center France (VRCF)
 Certified trainer for Vallourec University
 Organizer and host of annual meetings dedicated to the applications of numerical modeling at Vallourec, *Materials Modeling Workshops*

More on...

- Materials behaviour** High temperature deformation & microstructure evolution : creep, relaxation, recrystallization
 Permeability of porous materials : development of a calculation model based on porometry
- Hot & Cold work** Extrusion, piercing (seamless pipes), rolling, sintering, isostatic compression, ECAE/ECAP
- Characterization techniques** Physical (particle sizing methods, pyrometry...), Mechanical (nano-indentation, tensile tests...)
 Spectro-chemical (SEM-EBSD, FIB-TEM-EDS, XR-peak analysis...)
- Thermo-dynamics** Modeling of metallic alloys (Fe-Ni, Fe-Mn-C-S systems: liquid phase, sub-networks...)
 Nucleation, spinodal decomposition (unmixing) of refractory alloys,
 Calculation of nucleation enthalpies of binary compounds by Ab Initio methods, DFT (Materials Design Inc.)
- kinetics** ThermoCalc®, MatCalc®
- Physical -chemistry** Study of interactions between metallic and oxide phases in steelmaking processes (Ceqcsi®, Gemini®) :
 Wettability, impregnation and corrosion phenomena