Léa DEILLON

PhD in Materials Science and Engineering
Swiss nationality

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Experience

May 2020 – Present
Senior scientist
Advanced Manufacturing Lab, ETHZ, Zürich (CH)

Aug 2015 – Dec 2019
Postdoctoral fellow
Laboratory for Mechanical Metallurgy, EPFL, Lausanne (CH)

- I characterized and studied plastic deformation in microcast metallic single-crystalline microwires and micropillars
- I assessed the tensile and fatigue properties of Ti-6Al-4V titanium alloy parts produced by additive manufacturing, focusing on identifying the defects or microstructural features that initiate fracture
- I did thermodynamic calculations in order to better understand and predict the composition of complex transition carbides in steel and I measured their hardness by nanoindentation
- I was in charge of organizing lab works for undergraduate students; I taught lab works and tutorials at an undergraduate and postgraduate level

Jan 2015 – July 2015
Postdoctoral fellow
Computational Materials Laboratory (80%) & Interdisciplinary Centre for Electron Microscopy (20%), EPFL, Lausanne (CH)

- I set up experiments and participated in creating a Massive Open Online Course (MOOC) "Introduction to materials science"
- I did scanning electron microscopy services and trainings for energy dispersive X-ray spectroscopy users

Mar 2013 – Sep 2014
Postdoctoral fellow
Institut Jean Lamour, Université de Lorraine, Nancy (FR)

I conducted research on solutal melting (dissolution) in various metallic systems, with a focus on the Cu-Ni and Ag-Ti binary systems:

- I performed in-situ observations using high temperature laser confocal microscopy to track the motion of the solid-liquid interface during melting
- I did isothermal holding experiments and post-mortem characterization of interfacial areas using SEM, EBSD and TEM
- I developed a numerical model to better understand the kinetics of the process

Skills

Research areas	Physical and mechanical metallurgy, phase transformations, solidification and melting, diffusion, joining, thermodynamics
Techniques	Metallography, scanning electron microscopy, energy dispersive X-ray spectroscopy, laser scanning confocal microscopy, nanoindentation, optical microscopy, finite-difference modelling, X-ray diffraction, mechanical testing, fractography, basic transmitted electron microscopy
Computer	Mathematica, Origin, ImageJ, ThermoCalc, C language, LaTeX, Adobe CS3, MS Office
Languages	French (native), English (fluent), German (basic)

Education

2008-2012 **PhD in Materials Science and Engineering**
"Interdiffusion Bonding in the Au-In and In-Ni systems: application to MEMS packaging"

The Swatch Group R&D SA, division Asulab, Marin (CH)
Ecole Polytechnique Fédérale de Lausanne, Lausanne (CH)
(Computational Materials Laboratory & Interdisciplinary Centre for Electron Microscopy)

- I fabricated Au-In and In-Ni diffusion couples to study the growth of intermetallic compounds (IMC)
- I developed a finite-difference model based on diffusion and thermodynamic data to simulate the IMC growth during bonding
- I did bonding tests for the hermetic packaging of MEMS, which lead to 2 patents

2006-2008 **Master of Science in Materials Science and Engineering**
Ecole Polytechnique Fédérale de Lausanne, Lausanne (CH)

2003-2006 **Bachelor of Science in Materials Science and Engineering**
Ecole Polytechnique Fédérale de Lausanne, Lausanne (CH)