

# **Workshop: Hydrogen Analysis by Atom Probe Tomography**



**Tuesday 16 April 2024 - Thursday 18 April 2024**

**Max-Planck-Institut für Eisenforschung GmbH**

## **Scientific Programme**

16th of April (Day 1)

### **Invited Talk**

09:00 – 09:45 Baptiste Gault (Invited Talk)

b.gault@mpie.de

“I knew you were trouble: analyzing hydrogen analysis by APT”

Max-Planck-Institute für Eisenforschung GmbH

### **Session: Applied Materials: Hydrogen in Solid Solution**

09:45 – 10:05 Surendra Kumar Makineni (Regular Talk)

skmakineni@iisc.ac.in

“Insights into Hydrogen Embrittlement of Nickel Single Crystal Superalloys”

Indian Institute of Science, Bangalore

10:05 – 10:25 Dieter Isheim (Regular Talk)

isheim@northwestern.edu

“Hydrogen and Deuterium distribution in additively manufactured high strength-steels”

Northwestern University

Coffee Break

10:45 – 11:05 Huan Zhao (Regular Talk)

h.zhao@xjtu.edu.cn

“Atomic-scale analysis of hydrogen embrittlement and corrosion in high-strength Al alloys”

Xi'an Jiaotong University

### **Invited Talk**

11:05 – 11:50 Guillaume Hachet (Invited Talk)

g.hachet@mpie.de

“Controlled boron segregation in martensitic steels to improve the resistance against hydrogen embrittlement”

Max-Planck-Institute für Eisenforschung GmbH

### **Session: Background and Instrumentation**

11:50 – 12:10 Richard G. Forbes (Regular Talk)

r.forbes@surrey.ac.uk

“Background knowledge about hydrogen behavior in the context of field ion emitters”

University of Surrey

12:10 – 12:30 Paul A. J. Bagot (Regular Talk)

paul.bagot@materials.ox.ac.uk

Title: “Experimental approaches to maximize accurate APT hydrogen-quantification in metallurgical materials”

University of Oxford  
Lunch (END OF DAY 1)

17th of April (Day 2)

### **Invited Talk**

09:00 – 09:45 Michael Rohwerder (Invited Talk)  
rohwerder@mpie.de  
“Mapping hydrogen activity at high local resolution by scanning Kelvin probe techniques”  
Max-Planck-Institute für Eisenforschung GmbH

### **Session: Background and Instrumentation**

09:45 – 10:05 Peter Felfer (Regular Talk)  
peter.felfer@fau.de  
“Pulsed laser experiments in an ultra-low H atom probe”  
Institut für Allgemeine Werkstoffeigenschaften, Friedrich-Alexander-Universität, Erlangen-Nürnberg

10:05 – 10:25 Severin Jakob (Regular Talk)  
severin.jakob@chalmers.se  
“Exploring measurement parameters and modes of the newest generation of LEAP instruments for quantification of hydrogen”  
Chalmers University of Technology  
Coffee Break

### **Invited Talk**

10:45 – 11:30 Astrid Pundt (Invited Talk)  
astrid.pundt@kit.edu  
“Strategy development for measurements of hydrogen in APT and environmental TEM”  
Karlsruhe Institute of Technology (KIT)

### **Session: Hydrogen Charging via Unconventional Methods**

11:30 – 11:50 Hazel Gardner (Regular Talk)  
hazel.gardner@ukaea.uk  
“APT of Deuterium in tungsten for fusion applications”  
UK Atomic Energy Authority

11:50 – 12:10 Jean-Baptiste Maillet (Regular Talk)  
jean-baptiste.maillet@univ-rouen.fr  
“In-situ Hydrogen Implantation in Atom Probe Tomography and Investigation of Hydrogen Embrittlement”  
GPM, University of Rouen

12:10 – 12:30 Benedict Ott (Regular Talk)  
benedict.ott@fau.de  
Title: “Gas exposure device for atom probe experiments”  
Friedrich-Alexander-Universität, Erlangen-Nürnberg  
Lunch and Poster Session

### **Invited Talk**

14:30 – 15:15 Maria Jazmin Duarte (Invited Talk)  
j.duarte@mpie.de  
“Micromechanical testing during hydrogen charging”  
Max-Planck-Institute für Eisenforschung GmbH

### **Session: Hydrogen Charging via Unconventional Methods**

15:15 – 15:35 James Douglas (Regular Talk)  
j.douglas@imperial.ac.uk  
“Gas phase deuterium charging of polymer nanocomposites for APT analysis”  
Imperial College London

15:35 – 15:55

Aparna Saksena (Regular Talk)  
a.saksena@mpie.de  
“Resolving hydrogen traps in two phase steels”  
Max-Planck-Institute für Eisenforschung GmbH  
Coffee Break

16:15 – 17:30

Establishing best practices when measuring hydrogen in APT  
(a structured discussion)  
End of Day 2 ---- Dinner

18th of April (Day 3)

### **Invited Talk**

09:00 – 09:45 Katie Moore (Invited Talk)  
katie.moore@manchester.ac.uk  
“Hydrogen localization in metallurgical samples with high resolution secondary ion mass spectrometry”  
University of Manchester

**Session: Hydride Forming Materials**

09:45 – 10:05 Bart J. Kooi (Regular Talk)

b.j.kooi@rug.nl

“Resolving hydrogen atoms in metal hydrides using scanning transmission electron microscopy”

University of Groningen, Nijenborgh

10:05 – 10:25 Benjamin Jenkins (Regular Talk)

benmjenkins123@gmail.com

“Combining Sample Preparation, Data Analysis, and Computational Modeling to Better Understand Hydrogen Behavior in Zirconium Alloys”

University of Rouen

Coffee Break

10:45 – 11:05 Aissatou Diagne (Regular Talk)

aissatou.diagne1@univ-rouen.fr

“Microscopic behavior of hydrogen and hydrides in Atom Probe Tomography of Zirconium”

GPM, University of Rouen

11:05 – 11:25 David Mayweg (Regular Talk)

david.mayweg@chalmers.se

“Investigation of H in Zr and stainless steel tubes from operation in nuclear power reactors”

Chalmers University of Technology

**11:25 – 11:55 Discussion and Ending Remarks**

Lunch and Departure

End of Day 3