

## EDUCATION BACKGROUND



### Swiss Federal Institute of Technology in Zurich <sup>(ETH, top 20)</sup> Zurich, Switzerland

- Ph.D Candidate in Energy/X-ray Imaging, GPA 5.0/6.0 12/2016 - 06/2020<sup>(Est.)</sup>
- Project: *Sub-second dynamics of liquid water transport in polymer electrolyte fuel cells revealed by 4D X-ray Tomographic Microscopy*. Funded by SNF [No. 166064]
- Advisor: Prof. Thomas J. Schmidt<sup>(ETH/PSI)</sup>; Co-examiner: Dr. Felix N. Büchi<sup>(PSI)</sup>, Dr. Jens Eller<sup>(PSI)</sup>

### Technical University of Munich <sup>(TUM, top 60)</sup> Munich, Germany

- M.Sc in Materials Science, jointly with LMU Munich, GPA 1.5/1.0 09/2015 - 09/2016
- Maîtrise in Physics, Uni. of Rennes 1, France (EU-Mobility), 15.6/20 09/2014 - 06/2015
- Advisor: Prof. Peter Müller-Buschbaum<sup>(TUM)</sup>; Co-examiner: Prof. Wolfgang Schmahl<sup>(LMU)</sup>

### Beijing Jiaotong University <sup>(BJTU, 211 project)</sup> Beijing, China

- B.Sc in Materials Chemistry, GPA 90/100 (major) 09/2009 - 06/2013
- Innovation Scholarship (top 5%); Learning Scholarship (3 years); 3 Patents issued (2012)
- Advisor: Prof. Hui Zhang <sup>(BJTU)</sup>

## PROFESSIONAL EXPERIENCE

### Paul Scherrer Institute <sup>(PSI, ETH domain)</sup> Villigen, Switzerland

- Doctoral Researcher, Fuel Cell Systems and Diagnostics Group <sup>(FCSD)</sup> 12/2016 - 06/2020<sup>(Est.)</sup>
- Project: *Sub-second dynamics of liquid water transport in polymer electrolyte fuel cells revealed by 4D X-ray Tomographic Microscopy*. [SNF No. 166064]
- Synchrotron X-ray Tomographic Imaging with High Spatial (2-3  $\mu$ m) and Temporal (0.1~1 s) Resolution at TOMCAT beamline at Swiss Light Source (SLS).

### Toyota Motor Europe <sup>(TME)</sup> Brussels, Belgium

- Research Collaborator, Fuel Cell XTM imaging at SLS 05/2017 - 02/2019<sup>(Est.)</sup>

### Technical University of Munich <sup>(TUM)</sup> Munich, Germany

- Student Research Assistant, Lab of Funct. Mater., Physics Depart. 10/2015 - 09/2016
- Nanostructured Cobalt Oxides/P(S-b-NIPAM) Composites for Sensor Applications".
- Characterized the morphology, structure and magnetic properties of structuremetal polymer composites using AFM, TEM, XPS, GISAXS, SAXS and SQUID techniques

### Infineon Technologies AG <sup>(INFINEON)</sup> Munich, Germany

- Working Student, Failure Analysis 12/2015 - 06/2016
- Failure Analysis of thermal and electrical stressed Infineon chips with temperature from -40 to 125 Celsius degrees and time from 0 to 10,000 hours
- Statistically analysed the electronic behaviours of stressed Infineon chips for optimization, then summarized and reported them to supervisor

### École des Ponts ParisTech <sup>(ENPC)</sup> Paris, France

- Modelling Trainee, Lab of Water, Environ. & Urban System <sup>(LEESU)</sup> 08/2015 - 09/2015
- Trained on the cyanobacteria matlab modelling system developed by LEESU and aimed to apply it into controlling system of lakes and rivers in China.
- Calibrated parameters in the specific models by using local meteorological data and predicted the cyanobacterial blooms for Yuqiao reservoir in Tianjin, China.

- Designed mechanical configuration of the test-stand for the split and delay line (SDL) of European XFEL with technical requirements consideration under ultra-high vacuum.
- Assembled the test-stand for SDL and tested its vacuum degree, furthermore fabricated Lemo cables and tested the parasitic motion of linear translation stage based on python.

## PUBLICATIONS

**Academic Papers**

- **H. Xu**, M. Bührer, F. Marone, Prof. T. J. Schmidt, F. N. Büchi, J. Eller. *Fighting the Noise: Towards the Limits of Subsecond X-ray Tomographic Microscopy of PEFC [J]*. ECS Trans. 80(8), 395-402 (2017).
- Prof. H. Zhang, **H. Xu**, Jinxiu Wan, Luting Yan, Chunai Dai. *Preparations of New Porous Oxides Spherical Powers by Spray Reaction Technique [J]*. Vacuum & Cryogenics (Chinese Ver.). 18(3), 134-141 (2012).
- X. Qi, **H. Xu**, X. Zhou. *Degradation of Highly Active Cypermethrin via Ultrasonic Irradiation Combined with Photocatalysis by Titanium Dioxide [J]*. Chem. Res. (Chinese Ver.). 23(3), 45-49 (2012).

**National Patents [China]**

- Prof. M. Fu, H. Zhang, H. Xu, L. Yan. Annular gas-liquid interface jiggling magnetic separation device [P]. Chinese Patent Grant: CN102441489A (2013), National Patent Bureau, Beijing, China.
- Prof. H. Zhang, **H. Xu**, M. Fu, L. Yan. *Gas-liquid interface jiggling magnetic separation controllable annular device capable of continuously operating [P]*. Chinese Patent Grant: CN102441490B (2013), National Patent Bureau, Beijing, China.
- X. Zhou, **H. Xu**, Prof. H. Jiang, X. Qi. *Ultrasonic-photocatalytic oxidation coupled fruit and vegetable cleaning device [P]*. Chinese Patent Grant: CN202311136U (2012), National Patent Bureau, Beijing, China.

**Dissertations**

- **H. Xu**, *Structure and Properties of Thermoresponsive Diblock Copolymers Embedded with Metal Oxide Nanoparticles [D]*. Master Thesis. LMU&TUM, Munich, Germany (2016).
- **H. Xu**, *Application of Mesoporous SnO<sub>2</sub> Materials in Dye-sensitized Solar Cells and Lithium Batteries. (Chinese Ver.) [D]*. Bachelor Thesis. BJTU. Beijing, China (2013).

**Technical Reports**

- H. Xu, *Modelling of Cyanobacteria Dynamics for YuQiao Reservoir in Tianjin, China [R]*. Training Report. École des Ponts ParisTech. Paris, France (2016).
- H. Xu, *Design and Construction of the Test-Stand for Split and Delay Line [R]*. Tech. Report. European XFEL. Hamburg, Germany (2015).

CONFERENCES  
AND TALKS**Meetings & Talks**

- **H. Xu**, M. Bührer, F. Marone, Prof. T. J. Schmidt, F. N. Büchi, J. Eller. *Advancements in 10Hz operando X-ray tomographic imaging of liquid water in gas diffusion layers in PEFCs [A]*. 8<sup>th</sup> International Conference on Fundamentals and Development of Fuel Cells. Nantes, France (2019).
- **H. Xu**, M. Bührer, F. Marone, Prof. T. J. Schmidt, F. N. Büchi, J. Eller. *Quantification of Feature Detectability for Sub-second X-ray Tomographic Microscopy of PEFC [A]*. 6<sup>th</sup> European PEFC & Electrolyser Forum. Lucerne, Switzerland (2017).
- **H. Xu**, Prof. P. Müller-Buschbaum, E. Metwalli. *Structure and properties of thermoresponsive diblock copolymers embedded with metal oxide nanoparticles [A]*. MaMaSELF Program Status Meeting. Rigi Kulm, Switzerland (2016).

## Meetings & Posters

- **H. Xu**, *Quantification of GDL water feature detectability for operando subsecond X-ray tomographic microscopy imaging of PEFCs* [A]. 69<sup>th</sup> Annual Meeting of the International Society of Electrochemistry. Bologna, Italy (2018).
- **H. Xu**, *Studies of Water Distribution in the Gas Diffusion Layer of Polymer Electrolyte Fuel Cells using X-ray Tomographic Microscopy* [A]. 15<sup>th</sup> Symposium on Modelling and Experimental Validation. Aarau, Switzerland (2018). **Poster Prize Award.**
- **H. Xu**, *Signal to Noise Ratio Evaluation for X-ray Computed Tomographic Imaging of Water in PEFCs* [A]. 14<sup>th</sup> Symposium on Modelling and Experimental Validation. Karlsruhe, Germany (2017).

## TEACHING AND SCHOOL

### Tutorials

- **529-0191-01L** *Renewable Energy Technology II, Energy Storage and Conversion (RET II)*.
- 2018 Spring, Teaching Assistant, Master Course. Prof. T. J. Schmidt, ETH Zürich.
- 2017 Spring, Teaching Assistant, Master Course. Prof. T. J. Schmidt, ETH Zürich.

### Summer School

- EXCITE Summer School on Biomedical Imaging. Organized by ETH Zürich & University Hospital, Zurich, Switzerland (2017).
- MaMaSELF Summer School on X-ray and Neutron Scattering. by University of Montpellier, Montpellier, France (2015).

## HONORS AND AWARDS

### International

- 2018 Poster Prize Award, *ModVal 2018 Conference Committee, Aarau, Switzerland*.
- 2015 Erasmus+ Scholarship, *European Education & Culture Executive Agency*.
- 2012 Finalist in TECO Green Tech Contest, *TECO Foundation, Taipei, ROC (Taiwan)*.

### Domestic (CN)

- 2012 Bronze in 8th CHALLENGE CUP Business Plan Competition, *Ministry of Edu. of China*.
- 2012 Innovation Scholarship, *Beijing Jiaotong Univeristy Beijing, China*.
- 2010 Learning Scholarship (for 3 years), *Beijing Jiaotong Univeristy, Beijing, China*.
- 2010 Excellent Member of Student Union, *Beijing Jiaotong Univeristy, Beijing, China*.
- 2010 Advanced Individual of Social Practice, *Beijing Jiaotong Univeristy, Beijing, China*.

## TECHNICAL SKILLS

### Programming & Softwares

- Python for image processing, parallel programming; Matlab for modelling; Labview for GUI.
- 3DSlicer; ImageJ; LaTeX; Mathematica; Inventor; AutoCAD; SQL; Adobe PS, PR, AE

## LANGUAGES AND HOBBIES

- English (fluent, C1), Chinese (native, C2)
- German (basic, A2), French (basic, A2)
- Photography, Jogging, Table Tennis, Chinese Cuisines

EU Standard

SIGNATURE  
Xu, Hong (徐泓)