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Swiss Residence Permit B
April 1993, China

XU, HONG PH.D. CANDIDATE

EDUCATION

ETH Zürich (ETH) — Zurich, Switzerland
Ph.D. Candidate, Energy/Electrochemistry, SNF & TOYOTA Funded. — 02/2017 - 02/2021 (Exp.)
- Diss. Title: 4D X-ray CT revealed Subsecond Dynamics of Water Transport in PEM Fuel Cell.
- Teaching Assistant in Renewable Energy (2017-19); Supervised Intern in CT Processing (2019)

Technical University of Munich (TUM) — Munich, Germany
M.Sc. in Geomaterials, GPA 1.43/1.0; EU Erasmus+ Scholarship — 10/2015 - 10/2016
M.Sc. in Physics (EU Dual-degree), GPA 15.6/20; University of Rennes I, France — 09/2014 - 08/2015
- Thesis (1.3/1.0): Structure & Properties of Thermoresponsive Copolymers/Fe_3O_4 Nanocomposites.

Beijing Jiaotong University (BJTU) — Beijing, China
B.Sc. in Materials Chemistry, GPA 90.3/100; Innovation Scholarship; 3 Patents — 09/2009 - 06/2013
- Thesis (A): Application of Mesoporous SnO_2 in Dye-sensitized Solar Cells and Lithium Batteries

CONTINUING EDUCATION

Quantic School of Business, MBA Fellow, GPA 3.8/4 (online case study) — 10/2019 - 01/2021 (Exp.)

IBM, Data Science Professional Certificate (Coursera) — 06/2019 - 08/2019

PROFESSIONAL EXPERIENCE

Paul Scherrer Institut (PSI) — Aargau, Switzerland
Energy Researcher, Fuel Cell Water Management — 12/2016 - 02/2021 (Exp.)
- Developed electric-fluidic rotary mechanical setup continuous X-ray CT imaging for fuel cell dynamics, and advanced big data (in TB) processing pipeline based on Python and Linux Slurm manager.
- Achieved fast (0.1s/10Hz) and high spatial (0.4-2.75m) resolution (State-of-the-Art) operando X-ray CT Imaging for fuel cell in collaboration with SLS. Supervised PSI Intern in CT image processing.

Toyota Motor Europe S.A. (TME) — Brussels, Belgium
Industrial Collaborator & Co-authors, Fuel Cell Materials Devel. — 03/2017 - 02/2019
- Facilitated collaboration with industrial giant in fuel cell vehicle field and coordinated Toyota funded project for investigation of novel MPL materials and water transport mode in fuel cell.
- Responsible for Technology and Data Transfer between Toyota R&D and PSI fuel cell group. Published co-papers in fuel cell MPL investigation (JPS 2019) and 4D X-ray CT imaging (ECST 2019).

Infineon Technologies AG (INF) — Munich, Germany
Working Student, Semiconductor Quality & Control Department — 12/2015 - 06/2016
- Evaluated quality and reliability of chip test system independently; specialized in failure analysis of thermal and electrical stressed Infineon developed semiconductor chips.
- Summarized and analyzed the electronic behavior data of stressed Infineon chips, severed as an iterative quality control process for performance optimizations.

European XFEL GmbH (XFEL) — Hamburg, Germany
Mechanical Intern, Materials Imaging & Dynamics Group — 05/2015 - 07/2015
- 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. [doi]
- 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.

PROJECT MANAGEMENT

Water Dynamics & Transport in Hydrogen Fuel Cell Devices (PhD Project) — Aargau, Switzerland
Swiss National Science Funded Project, PhD Student at PSI — 12/2016 - 11/2020 (Est.)
- Revealed the fundamental temperature dependent water transport mechanism and related heat management and charge transfer impacts for various GDL/MPL materials via fast X-ray CT imaging.

- Managed experimental strategy through 4 years SNF funded project and wrote proposals/reports for beamtime applications; Results were successfully published in 4 papers and few in progressing.

Thermo-responsive Polymeric Magnetic Sensor (Master Project) Munich, Germany
Research Assistant, Funct. Mater. Group-E13, TUM Physics Department. 10/2015 - 09/2016

- Spray-coated nanostructured cobalt oxides/P(S-b-NIPAM) composites and monitored its thermoresponsive structure formation and magnetic properties via in-situ SAXS and ex-situ GISAXS technique.
- Developed humidity circulation chamber system within in-house SAXS instrumentation for physical dynamic studies of diblock copolymer system. [doi]

Cyanobacteria Aquatic System Modeling (CN-FR Cooperative Project) Tianjin, China/Paris, France
Modelling Trainee, Ecole des Ponts ParisTech. 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. [doi]
- Calibrated parameters in the specific models by using local meteorological data and predicted the cyanobacterial blooms for Yuqiao reservoir in Tianjin, China.

Application of SnO_2 in Solar Cells & Li-batteries (Bachelor Thesis) Beijing, China
Innovative Project, Research Assistant, Beijing Jiaotong University. 11/2012 - 06/2013

- Synthesized novel mesoporous SnO_2 particles via spray reaction method and applied it in dye-sensitized solar cells and lithium ion batteries for improving their efficiency and performance.
- Led team of 5 people and joined the Tech Green Contest and Business Plan Competition. Published 1 paper in RSC Advances and 3 patents regarding the selection of magnetic particles.

Patents

Prof. H. Zhang, ***H. Xu**. Gas-liquid magnetic separation device. CN102441490B, China. 2013
Prof. H. Zhang, ***H. Xu**. Annular magnetic separation device. CN102441489A, China. 2013
X. Qi, H. Jiang, ***H. Xu**. UV-photocatalytic food cleaning device. CN202311136U, China. 2012

Featured Papers

***H. Xu** et al. Water Management and Saturation in PEFC GDL. (*co-author reviewing*). 2020
***H. Xu** et al. Optimal Image Denoising for Fuel Cell fast X-ray CT. *J. Electrochem. Soc.* 2020
***H. Xu** et al. Sub-second & Sub-micron Operando CT. *ECS Trans.* **(Toyota Co-author)** 2019
***H. Xu** et al. Fighting the Noise: Towards PEFC Operando CT. *ECS Trans.* 2017
Y. Nagai, - ***H. Xu** et al. Modified MPL Enhanced PEFC. *J. Power Source* **(Toyota Co-author)** 2019

Honors & Awards

ECS Travel Grant, US Army Research Office & Electrochemical Society, Atlanta, USA. 2019
Poster Prize Award, ModVal 2018 Conference Committee, Aarau, Switzerland. 2018
TOYOTA Project Funding (2 years), Toyota Motor Europe S.A., Brussels, Belgium. 2018
Erasmus+ Scholarship, European Education & Culture Executive Agency. 2015
National Bronze, 8th "Challenge Cup" Business Plan Competition, Ministry of Edu. of China. 2012
Innovation Scholarship (Top 5%), Beijing Jiaotong University,China. 2012
Learning Scholarship (3 years), Beijing Jiaotong University, China. 2011
Excellent Member of Student Union, Beijing Jiaotong University, China. 2010

Extra-curriculars

EPFL Workshop: Attendant at EPFL Applied Machine Learning Days 2020
Strategic Management: Courses and case study at D-MTEC ETH Zürich 2020
Norvatis Hackathon: Pharma Data Science & Sales Prediction at Norvatis Leadership Forum 2019
Medical Imaging Training: MRI/CT Training at University Hospital Zurich 2017
Volunteer Tutor: Volunteered as School Tutor for Jishuitan Elementary School in Beijing 2010

Data Science Skills

Image Processing: Python(ITK, openCV, Pillow); 3DSlicer; Fiji/ImageJ; Paraview
Data Analytics: Python(scikit-learn, scipy); Matlab; Linux; Slurm Load Manager
Softwares: LaTeX; GeoDict; Origin; Adobe PS; Final Cut Pro; Inventor; Wind

Languages & Hobbies

English (fluent, C1), Chinese (native, C2), German (basic, A2), French (basic, A2)
Photography (https://xgraphy.github.io), Video Editing, Hiking, Table Tennis, Chinese Cuisines