

# CURRICULUM VITAE

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## **Haihua Liu**

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## **Education:**

Ph.D. Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, China

## **Research Interests:**

- Materials characterization by advanced analytical TEM methods, such as SAED, HREM, EELS, CBED, EFTEM, STEM, Lorentz microscopy, tomography, to investigate the relationship between materials properties and microstructure in physics and materials science
- Ultrafast Electron Microscopy to study ultrafast dynamics in condensed matter physics, materials science, biology at a spatiotemporal resolution of atomic-scale and femtoseconds

## **Professional Experience:**

Argonne National Laboratory - Center for Nanoscale Materials (CNM) 2017-present

- Ultrafast dynamics study of materials at temporal resolution of femtoseconds time scale and spatial resolution of atomic-scale
- Data science in the transmission electron microscopy
- Materials characterization by various advanced TEM techniques

California Institute of Technology, Division of Chemistry and Chemical Engineering, USA

- Development and application of 4D ultrafast electron microscopy to study light-materials interactions in physics and materials science at femtoseconds time scale and atomic-scale

Risø National Laboratory for Sustainable Energy, Technical University of Denmark, Denmark

- Development of a non-destructive three-dimensional orientation mapping technique in the transmission electron microscopy

## **Selected publications:**

1. **Haihua Liu**, J. Spencer Baskin, and Ahmed H. Zewail, Infrared PINEM developed by diffraction in 4D UEM, **Proc. Natl. Acad. Sci.**, 113, 2041 (2016).
2. Mohammed T. Hassan, **Haihua Liu**, John Spencer Baskin, and Ahmed H. Zewail. Photon gating in four-dimensional ultrafast electron microscopy. **Proc. Natl. Acad. Sci.**, 122, 12944 (2015).
3. Byung-Kuk Yoo, Oh-Hoon Kwon, **Haihua Liu**, Jau Tang, Ahmed H. Zewail, Observing the ephemeral nucleation of liquid-to-crystal phase transitions in space and time. **Nat.Comm.**6, 8639, (2015).

## CURRICULUM VITAE

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4. **Haihua Liu**, Oh-Hoon Kwon, Jau Tang, and Ahmed H. Zewail, 4D Imaging and Diffraction Dynamics of Single-Particle Phase Transition in Heterogeneous Ensembles, **Nano. Lett.** 14, 946(2014).
5. John Spencer Baskin, **Haihua Liu**, and Ahmed H. Zewail, 4D multiple-cathode ultrafast electron microscopy. **Proc. Natl.Acad.Sci**, 111, 10479 (2014).
6. **H.H. Liu**, S. Schmidt, H.F. Poulsen, A. Godfrey, Z.Q. Liu, J. Sharon, X. Huang, Three Dimensional Orientation Mapping in the Transmission Electron Microscope, **Science**. 332 833(2011).
7. **H.H. Liu**, N. Pryds, J. Schou, X. Huang, Quantitative TEM analysis of Al/Cu multilayer prepared by pulsed laser deposition, **Appl. Phys. A**, 101(4), 677 (2010).
- 8 **H.H. Liu**, X.F. Duan, R.C. Che, X.K. Duan, Measurement of the remnant magnetic-field in Lorentz mode using Permalloy, **Acta Metall. Sin**, 22(6), 435 (2009).
9. **H.H. Liu**, X.K. Duan, R.C. Che, Z.F. Wang, X.F. Duan, *In situ* Lorentz microscopy observation of displaced chain walls in Permalloy, **Mater. Trans.** 50 (7), 1660 (2009).
10. **H.H. Liu**, X.F. Duan, Q.X. Xu, Finite-element study of strain field in Strained-Si pMOSFET, **Micron**. 40(2), 274 (2008).
- 11.**H.H. Liu**, X.F. Duan, Q.X. Xu, and B.G. Liu, Study of strained-silicon channel metal–oxide–semiconductor field effect transistors by large angle convergent-beam electron diffraction, **Ultramicroscopy**. 108 (9), 816 (2008).