Masashi Watanabe

Contact Information:

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Biography:

Masashi Watanabe is a Professor at Department of Materials Science and Engineering in Lehigh University. Masashi is also affiliated with Lehigh University's Materials Characterization Facility as an associate director under the Institute of Functional Materials and Devices. Masashi's research emphasizes materials characterization using various electron microscopy approaches involving analysis via X-rays and energy-loss electrons in analytical electron microscopes (AEMs) and atomic-resolution high angle annular dark-field (HAADF) imaging in scanning transmission electron microscopes (STEMs). He developed the zeta-factor method for quantitative X-ray analysis and implemented multivariate statistical analysis (MSA) for spectrum images of X-rays and energy-loss electrons. He has more than 250 research publications in scientific journals and conference proceedings, and has given more than 150 invited presentations and seminars at numerous conferences and institutions. He received the K.F.J. Heinrich Young Scientist Award from the Microbeam Analysis Society in 2005, the Kazato Prize from the Kazato Research Foundation in 2008, and the Seto Award (the Society Award) from the Japanese Society of Microscopy in 2011. He has been a lecturer and one of the organizers of the Lehigh Microscopy School since 2001. He has been a lecturer in various Microscopy Schools including the Arizona State University Winter School on High Resolution Electron Microscopy (since 2008) and the Nano Science Education Program in Osaka University Japan (since 2015). Dr. Watanabe served as President of the Microanalysis Society from 2016-2018 and became an MAS Fellow in 2019. Dr. Watanabe is now serving a Physical Science Director in the Microscopy Society of America (MSA) since 2020 and became a MSA Fellow in 2020.

Research Interests and Topics of Presentation:

- Quantitative X-ray analysis in TEM
- Materials characterization in aberration-corrected STEM
- Hyper spectral imaging data analysis via multivariate statistical analysis
- Development of a high energy-loss spectrometry system (not available yet, near future)