

Kenta Ohtaki

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Summary

Materials scientist with extensive experience in materials characterization and analysis utilizing electron microscopy and x-ray diffraction. Skilled in operation of several key analytical instruments as well as problem and resolution identification. Familiar with sample preparation and characterization of various materials. Experienced in working effectively both individually and in a group, including domestic and international research collaborations. Strong writing, communication, and presentation skills as well as management ability demonstrated through publications, conference presentations, and lab assistant work.

Education

2015-2018 June

PhD in Materials Science and Engineering at University of California, Irvine

2013-2015

M.S. in Materials Science and Engineering at University of California, Irvine

2009-2013

B.S. in Materials Science and Engineering at Tokyo University of Science

Experience

2014-present Lab assistant at Irvine Materials Research Institute (IMRI):

Consultation and training on SEM and TEM as a technical expert. Assistant for sample preparation and imaging of metals, polymers, ceramics, semiconductors, organic cells, etc. at the nano- to macro- scale including EDS mapping, FIB cross section imaging, failure analysis, etc.

Contract works and consultation:

Failure analysis on classified lawsuit involving structural ceramic (EDS, XRD and TEM)

FIB cross section and imaging of ion tracks in polymer materials

FIB cross section of artificial teeth and SEM imaging of human teeth for FDA approval

Imaging and EDS on solar cell materials

Failure analysis on filters for water (EDS and SEM)

FIB cross section imaging for microchips

FIB cross section of 3D printed specimens

EBSD and TEM imaging on ceramic thermal barrier coatings

2016-8 winter Teaching Assistant: Introduction to Materials Science and Engineering

Responsible for office hours, discussion sessions, and grading for a class of 200 students.

2015 summer Teaching Assistant: Mechanical Behavior/Design Principles

Responsible for office hours, discussion sessions, and grading for a class of 40 students.

Skills and Techniques

Characterization and Analysis

SEM (secondary electron imaging, back scatter electron imaging, use of stage bias, environmental/low vacuum mode, EDS, EBSD), **FIB** (cross-sectional analysis and TEM sample preparation); **S/TEM (bright field, dark field, selected area electron diffraction, cryo-holder, HRTEM, EDS, EELS)**, **XRD** (phase identification, unit cell deformation analysis, Rietveld analysis, high temperature XRD), Raman spectroscopy, FTIR, UV-vis, nano/micro-indentation, nanomill, sputter coating. **Instrument experience in operation of FEI: Magellan SEM, Quanta SEM/FIB, Philips: CM-20 TEM, JEOL: S/TEM 2800, TEM 2100, Grand ARM, TESCAN: GAIA3 SEM/FIB and Rigaku: Smart lab XRD.**

Synthesis and Processing

Direct precipitation and solid-state reaction synthesis, ball milling, cold isostatic press, box and tube high temperature furnace (controlled environment), slow speed saw, spark plasma sintering, arc melting furnace, sputter coating, polishing (mirror finish with 60 nm colloidal silica).

Software

Oxford Aztec, INCA, Tango, Gatan Digital Micrograph 3, ImageJ, Microsoft Office, PDXL, GRANTA CES materials selection software and Adobe illustrator.

Research Projects

- Characterization of radiation damage behavior in ceramic materials (collaboration with UCSD, UTK, GSI and LANL): XRD, FIB and S/TEM imaging
- Synthesis of highly proton conductive doped LaPO₄ for fuel cell applications: experiment design and analysis
- Synthesis of high entropy oxides via solution route: mentoring and experiment development
- Synthesis of Gd₂Zr₂O₇-LaPO₄ composite: mentoring and experiment development
- Li doping into V-doped Boron via electrochemical method: undergraduate research at Tokyo University of Science

Publications and Proposals

- Kenta K. Ohtaki, Peter E. D. Morgan, Martha L. Mecartney “Extended solid solubility of Sr in LaPO₄ monazite”, *Solid State Ionics*, **293** (2016) 44-50
- Kenta K. Ohtaki, Maulik K. Patel, Martha Mecartney *et al.* “A new approach to high temperature radiation resistant materials using oxide heterointerfaces” in submission process
- Kenta K. Ohtaki, Maulik K. Patel, Martha Mecartney *et al.* “Effect of heterointerfaces on ion track formation in three-phase ceramic of YSZ, Al₂O₃ and MgAl₂O₄ under 946 MeV Au ion irradiation” in submission process
- Proposal approved for beam time at UNILAC GSI Helmholtz Centre for Heavy Ion Research, Germany 2016: Experiment UMat Mecartney G-PAC42: "Radiation damage in multiphase ceramics and the effect of grain size"
- Kenta Ohtaki, Maulik Patel and Martha Mecartney, “Radiation Damage Behavior in Multiphase Ceramics”, Microscopy & Microanalysis conference, Nuclear and Irradiated Materials, 2016
- Kenta Ohtaki, Maulik Patel and Martha Mecartney, "Radiation Damage in Multiphase Ceramics" Transactions of the American Nuclear Society, Vol. 115, 2016

Awards and Scholarships

2013-2015	Funai Overseas Scholarship
2014	Denver X-ray conference travel grant
2014	MS&T 2014 Ceramographic competition SEM category 1st place
2014	MS&T 2014 General Poster presentation competition 2nd place

Activities

2018	International Conference on Advanced Ceramics and Composites, oral presentation
2016	American Nuclear Society Winter Meeting, oral presentation
2014, 2015, 2016	Materials Science & Technology, oral presentations
2016	Microscopy & Microanalysis, oral presentation
2016	Southern California Society of Microscopy & Microanalysis, oral presentation
2014	Denver X-ray Conference, poster presentation

Professional Association Membership

- American Ceramic Society
- American Nuclear Society
- Microscopy Society of America