

Kai Narita

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EDUCATION

California Institute of Technology (CA, USA) / Sep 2016 – May 2021 (expected)

PhD candidate in Materials Science, GPA 3.50/4.00

Tokyo Institute of Technology (Tokyo, Japan) / Apr 2014 - Mar 2016

Master of Engineering in Metallurgy and Ceramics Science, GPA: 3.72/4.00

Tokyo Institute of Technology (Tokyo, Japan) / Apr 2010 - Mar 2014

Bachelor of Engineering in Metallurgical Engineering, GPA: 3.80/4.00 (the top grade)

Tokyo Medical and Dental University (Tokyo, Japan) / Apr 2012 - Mar 2014

Completion of Medical Engineering Course

TECHNICAL SKILLS

Battery evaluations:	EIS, CV, GITT, cycling tests
Material fabrication:	Electroplating, Digital Light Processing (DLP) 3D printing, Sputtering, Spark plasma sintering (SPS), planetary ball milling, Atomic Layer Deposition (ALD)
Microstructural evaluation:	Optical microscopy, SEM, EDS, TEM, EPMA, XRD, Raman spectroscopy, XPS, Secondary-Ion Mass Spectroscopy (SIMS)
Mechanical evaluation:	Micro Vickers hardness test, compression test
Biological evaluation	pH meter, cell culture, fluorescence microscopy
Thermal analysis:	DSC, DTA-TG
Computer:	Matlab, Python, SolidWorks, Origin, Image J, GIMP, Microsoft Office

RESEARCH & WORK EXPERIENCES

California Institute of Technology (CA, USA) / Jan 2017 – Present

PhD thesis research under Prof. Julia Greer

- Developed 3D architected carbon battery electrodes with controllable and flexible multi-scale form-factors using lithography-based 3D printing and pyrolysis for Li- and Na-ion batteries
- Elucidated multi-scale battery dynamics using 3D architected carbon: effects of porous electrode architecture at micron-scale on solid electrolyte interface formation at nano-scale

Max Planck Institute for Solid State Research (Stuttgart, Germany) / May 2019 – Oct 2019

Visiting researcher under Prof. Joachim Maier and Dr. Robert Usiskin

- Developed thin films of lithium oxide and lithium sulfide by radio frequency sputtering
- Characterized microstructure and solid-state ionic conduction mechanism of air- and electron-sensitive thin films by SEM, TEM, EELS, SIMS and EIS with in-situ heating

Tokyo Institute of Technology (Tokyo, Japan) / Oct 2012 - Aug 2016

Bachelor's and Master's Thesis Research, and research assistant under Prof. Equo Kobayashi

- Developed Mg/ β -tricalcium phosphate (β -TCP) composites by ball milling and spark plasma sintering (SPS) for orthopedic biodegradable implants
- Elucidated relationship among sintering behavior, *in vitro* corrosion, and mechanical properties of Mg/ β -TCP composites

University of Wisconsin-Madison (WI, USA) / Sept - Oct 2015

Visiting Researcher, under Prof. Sindo Kou

- Investigated liquation cracking during metal inert gas (MIG) welding of Mg alloys

University of California, Riverside (CA, USA)/ Jul - Sept 2014

Visiting Researcher, under Prof. Huinan Liu

- Evaluated corrosion properties and cytocompatibility of Mg/ β -TCP composites

National Institute for Material Science (NIMS) (Tsukuba, Japan)/ Mar 2014 (one month)

Internship, under Dr. Sachiko Hiromoto

- Investigated effects of sintering temperatures of SPS on corrosion properties of pure Mg

NIPPON STEEL & SUMITOMO METAL (Hokkaido, Japan)/ Aug 2012 (one month)

Internship

- Developed continuous cooling transformation (CCT) phase diagrams of alloyed steels

Selected PUBLICATIONS & PATENTS

1. K. Narita, M. A. Citrin, H. Yang, X. Xia, J. R. Greer; 3D Architected Carbon Electrodes for Energy Storage, *early view in Advanced Energy Materials* **2020 (selected for journal cover)**
2. US Patent 10833318B2, “Three-Dimensional Architected Pyrolyzed Electrodes for Use in Secondary Batteries and Methods of Making Three-Dimensional Architected Electrodes,” Nov 10, **2020**
3. K. Narita, Q. Tian, I. Johnson, C. Zhang, E. Kobayashi, H. Liu; Degradation behaviors and cytocompatibility of Mg/ β -tricalcium phosphate composites produced by spark plasma sintering, *Journal of Biomedical Materials Research Part B: Applied Biomaterials* **2019**
4. N. Q. Cao, D. N. Pham, K. Narita, H. V. Dinh, S. Hiromoto, E. Kobayashi; In Vitro Corrosion Properties of Mg Matrix In Situ Composites Fabricated by Spark Plasma Sintering, *Metals* **2017**; 7 (9), 358
5. K. Narita, E. Kobayashi, T. Sato; Sintering behavior and mechanical properties of Mg/ β -tricalcium phosphate composites sintered by spark plasma sintering, *Materials Transaction* **2016**; 57; 1620-7
6. N. Cao, K. Narita, E. Kobayashi, T. Sato; Evolution of the microstructure and mechanical properties of Mg-matrix *in situ* composites during spark plasma sintering, *Powder Metallurgy* **2016**;1–6

LEADERSHIP ACTIVITIES & RELEVANT SKILLS

- Mentored virtually one undergraduate in Caltech SURF program /June – August 2020
- Organized 3-days Summer Camp with visits at Caltech, UCLA and NASA-JPL for K-12 students in the Masason foundation / August 2019
- Organized study abroad support initiatives, XPLANE (<http://xplane.seldoan.net/>, run 800+ participants Slack community) and The Japanese Graduate Student Association in the United States (JGSAU) (<https://gakuiryugaku.net/english>, hold seminars) / June 2019 – Present
- Performed a science show in the science communication competition, EURAXESS Science Slam Japan 2014 and won **the Grand Prize** (Title: Na-rry Potter and Mg) / Nov 2014

Language skills: fluent English; native Japanese