

Daichi Kozawa, Ph.D.

Japan Society for the Promotion of Science (JSPS) Postdoctoral Fellow
Department of Chemical Engineering, Massachusetts Institute of Technology, 77
Massachusetts Avenue, Cambridge MA 02139 USA
Phone: 617 253 3178
E-mail: dkozawa@mit.edu

Qualifications

Ph.D.	Energy Science	Kyoto University, Kyoto	Mar 2015
M.Sc.	Energy Science	Kyoto University, Kyoto	Mar 2012
B.A.	Engineering	Doshisha University, Kyoto	Mar 2010

Current Appointments

2016 - present	JSPS Postdoctoral Fellow, Graduate School of Engineering, Nagoya University, Chikusa-ku, Nagoya, Japan
2015 - present	JSPS Postdoctoral Fellow, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge MA, USA.

Previous Appointments

2015 - 2016	JSPS Postdoctoral Fellow, School of Advanced Science and Engineering, Waseda University, Shinjuku-ku, Tokyo, Japan
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Current Research and Corporative Activities

- Multiple research projects including microscopic imaging of porous graphene, development of opto-electronic devices based on atomic sheets and building up multi-functional scan probe spectroscopy systems.

Previous Research

Ph.D. dissertation, Behavior of photocarrier in atomically thin two-dimensional semiconducting materials for optoelectronics. Spectroscopy of atomically thin transition metal dichalcogenides and chemically derived graphene.

M.Sc. dissertation, Formation of two-dimensional honeycomb array of colloidal particles on oil-water interface. Developed technique to measure inter-particle forces and modified their array structure.

B.A. dissertation, Synthesis of silicon nanoparticles based on electrochemistry in molten salt. Fabricated Si nanoparticles and evaluated their morphology

Funding

- JSPS, Grant-in-Aid for Young Scientists (B), ¥3,250,000, Apr 2016 – Mar 2018
- JSPS, Grant-in-Aid for JSPS Fellows (PD), ¥2,990,000, Apr 2015 – Mar 2017
- Tokyo Institute of Technology, Research Grant, ¥300,000, Apr 2014 – Mar 2015

Awards

- **President's Award**, Kyoto University (2014).
- **Poster Award**, Condensed Matter Photophysics conference in Kobe (2014). 5% Of posters presented at the conference
- **Poster Award**, The 46th Fullerenes-Nanotubes-Graphene General Symposium (2014). One of 5 poster award winners among 50 posters presented at the conference

- **Student Award**, Institute of Advanced Energy, Kyoto University, "Optical properties of graphene oxides" (2014). Awarded to the best student in Institute of Advanced Energy, Kyoto University
- **Best poster Award**, "Interaction between particles at a vertical oil-water interface", International Symposium on Renewable Energy & Materials Tailoring 2011 (2011).

List of Publications

1. **Kozawa, D.**; Carvalho, A.; Verzhbitskiy, I.; Giustiniano, F.; Miyauchi, Y.; Mouri, S.; Castro Neto, A. H.; Matsuda, K.; Eda, G. Evidence for Fast Interlayer Energy Transfer in MoSe₂/WS₂ Heterostructures. *Nano Lett.* In press 2016.
2. Zhao, W.; Wang, S.; Liu, B.; Verzhbitskiy, I.; Li, S.; Giustiniano, F.; **Kozawa, D.**; Loh, K. P.; Matsuda, K.; Okamoto, K.; Oulton, R. F.; Eda, G. Exciton-Plasmon Coupling and Electromagnetically Induced Transparency in Monolayer Semiconductors Hybridized with Ag Nanoparticles. *Adv. Mater.* 2016, 28, 2709–2715.
3. Matsuki, K.; Pu, J.; **Kozawa, D.**; Matsuda, K.; Li, L.-J.; Takenobu, T. Effects of electrolyte gating on photoluminescence spectra of large-area WSe₂ monolayer films. *Jpn. J. Appl. Phys.* 2016, 55, 06GB02.
4. Wang, F.; **Kozawa, D.**; Miyauchi, Y.; Hiraoka, K.; Mouri, S.; Ohno, Y.; Matsuda, K. Considerably improved photovoltaic performance of carbon nanotube-based solar cells using metal oxide layers. *Nat. Commun.* 2015, 6, 6305.
5. Tsuboi, Y.; Wang, F.; **Kozawa, D.**; Funahashi, K.; Mouri, S.; Miyauchi, Y.; Takenobu, T.; Matsuda, K. Enhanced photovoltaic performances of graphene/Si solar cells by insertion of a MoS₂ thin film. *Nanoscale* 2015, 7, 14476-14482.
6. Wang, F.; **Kozawa, D.**; Miyauchi, Y.; Hiraoka, K.; Mouri, S.; Ohno, Y.; Matsuda, K. Fabrication of Single-Walled Carbon Nanotube/Si Heterojunction Solar Cells with High Photovoltaic Performance. *ACS Photonics* 2014, 1, 360-364.
7. Sakka, T.; **Kozawa, D.**; Tsuchiya, K.; Sugiman, N.; Oye, G.; Fukami, K.; Nishi, N.; Ogata, Y. H. Two-dimensional array of particles originating from dipole-dipole interaction as evidenced by potential curve measurements at vertical oil/water interfaces. *Phys. Chem. Chem. Phys.* 2014, 16, 16976-16984.
8. **Kozawa, D.**; Zhu, X.; Miyauchi, Y.; Mouri, S.; Ichida, M.; Su, H.; Matsuda, K. Excitonic Photoluminescence from Nanodisc States in Graphene Oxides. *J. Phys. Chem. Lett.* 2014, 5, 1754-1759.
9. **Kozawa, D.**; Kumar, R.; Carvalho, A.; Amara, K. K.; Zhao, W.; Wang, S.; Toh, M.; Ribeiro, R. M.; Castro Neto, A. H.; Matsuda, K.; Eda, G. Photocarrier relaxation pathway in two-dimensional semiconducting transition metal dichalcogenides. *Nat. Commun.* 2014, 5, 4543.
10. Fuyuno, N.; **Kozawa, D.**; Miyauchi, Y.; Mouri, S.; Kitaura, R.; Shinohara, H.; Yasuda, T.; Komatsu, N.; Matsuda, K. Drastic Change in Photoluminescence Properties of Graphene Quantum Dots by Chromatographic Separation. *Adv. Opt. Mater.* 2014, 2, 983-989.
11. Wang, F.; **Kozawa, D.**; Miyauchi, Y.; Hiraoka, K.; Mouri, S.; Matsuda, K. Enhancement Mechanism of the Photovoltaic Conversion Efficiency of Single-Walled Carbon Nanotube/Si Solar Cells by HNO₃ Doping. *Appl. Phys. Express* 2013, 6, 102301.
12. **Kozawa, D.**; Miyauchi, Y.; Mouri, S.; Matsuda, K. Changing photoluminescence spectra of graphene oxide by centrifugation treatments. *Phys. Status Solidi C* 2013, 10, 1600-1603.
13. **Kozawa, D.**; Miyauchi, Y.; Mouri, S.; Matsuda, K. Exploring the Origin of Blue and Ultraviolet Fluorescence in Graphene Oxide. *J. Phys. Chem. Lett.* 2013, 4, 2035-2040.
14. **Kozawa, D.**; Hiraoka, K.; Miyauchi, Y.; Mouri, S.; Matsuda, K. Analysis of the Photovoltaic Properties of Single-Walled Carbon Nanotube/Silicon Heterojunction Solar Cells. *Appl. Phys. Express* 2012, 5, 042304.

Languages

- **Japanese** Native speaker, writer, reader
- **English** Good

Mentorship Experience

- **Waseda University** (April 2015 - March 2016)
 - One undergraduate student who won a poster prize in 49th The Fullerenes, Nanotubes and Graphene Symposium and is currently a graduate student at The University of Tokyo.

Service

- **8th Visiting Party in Kyoto University Bhutan Friendship Program**, Shared up-to-date knowledge of solar cell technology based on nanomaterials.

References

Prof. Michael S. Strano
Professor
Department of Chemical Engineering, Massachusetts
Institute of Technology
77 Massachusetts Avenue, Cambridge MA 02139 USA
Tel: 617 324 4323
E-mail: strano@mit.edu

Prof. Goki Eda
Professor
Department of Physics, National University of Singapore
Singapore 2 Science Drive 3, 117542 Singapore
Tel: +65 6516 2970
E-mail: g.eda@nus.edu.sg

Prof. Taishi Takenobu
Professor
Graduate School of Engineering, Nagoya University
Furo-cho, Chikusa-ku, Nagoya, 464-8603 Japan
Tel: +81 52 789 5173
E-mail: takenobu@nuap.nagoya-u.ac.jp

Prof. Kazunari Matsuda
Professor
Institute of Advanced Energy, Kyoto University
Gokasho, Uji, Kyoto, 611-0011 Japan
Tel: +81 774 38 3460
E-mail: matsuda@iae.kyoto-u.ac.jp