

ADITYA D. MOHITE

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Professional preparation

University of Louisville, KY	Electrical Engineering	PhD 2007
M. S. University, Baroda, India	Solid State Physics	MS 2001
M. S. University, Baroda, India	Physics	BS 1999

Appointments

Associate Professor, Rice University		July 1, 2018 to present
Staff Scientist 4, Materials Physics and Applications		2017-2018
Staff Scientist 3, Materials Physics and Applications		2014-2017
Staff Scientist 2, Materials Physics and Applications		2012-2014
Center for Integrated Nanotechnologies, LANL Post-Doc Fellow		2010-2012
Rice University, TX	Post-Doctoral Associate	2009 (June-Dec)
University of Louisville, KY	Research Scientist	2008-2009

Awards and Honors

1. The 2019 Highly Cited Researchers list is a global accounting of scientists who produced the last decade's most influential papers, compiled by the Web of Science group, a Clarivate Analytics company. The list recognizes researchers "who produced multiple papers ranking in the top 1% by citations for their field and year of publication, demonstrating significant research influence among their peers," according to Web of Science. from 21 fields and for cross-field influence in scholarly publications between 2008 and 2018.
2. Keynote talk at the ACS Midwest Regional Meeting 2019
3. Plenary speaker at the International conference of physics of semiconductors July 2018
4. Resonate Resnick award for Sustainability Research 2017
5. Invited talk at the ANSER symposium on solar-electricity at Northwestern University
6. Performance award for outstanding work on perovskite-based materials (2015)
7. Distinguished performance award at LANL (2016).
8. More than 80 invited talks at major international conferences and academic institutions across the world.
9. Outstanding poster award at Los Alamos Post Doc Research Day in (2010, 2011) among all 250 post-docs across LANL.
10. First prize at the Engineers Day exhibit at University of Louisville, KY (2003).

Main Scientific Publications

1. B. Zhao, M. Abdi-Jalebi, M. Tabachnyk, H. Glass, V. S. Kamboj, W. Nie, A. J. Pearson, Y. Puttisong, K. C. Godel, H. E. Beere, D. A. Ritchie, A. D. Mohite, S. E. Dutton, R. H. Friend, A. Sadhanala, High Open-Circuit Voltages in Tin-Rich Low-Bandgap Perovskite-Based Planar Heterojunction Photovoltaics. *Adv Mater* **29**, (2017).
2. Hsinhan Tsai, Wanyi Nie, Yen-Hao Lin, Jean Christophe Blancon, Sergei Tretiak, Jacky Even, Gautam Gupta, Pulickel M Ajayan, Aditya D Mohite, Effect of Precursor Solution Aging on the Crystallinity and Photovoltaic Performance of Perovskite Solar Cells. *Advanced Energy Materials*, (2017).
3. Haejun Chung, Xingshu Sun, Aditya D Mohite, Rahul Singh, Lokendra Kumar, Muhammad A Alam, Peter Bermel, Modeling and designing multilayer 2D perovskite/silicon bifacial tandem photovoltaics for high efficiencies and long-term stability. *Optics Express* **25**, A311-A322 (2017).
4. J. C. Blancon, H. Tsai, W. Nie, C. C. Stoumpos, L. Pedesseau, C. Katan, M. Kepenekian, C. M. M. Soe, K. Appavoo, M. Y. Sfeir, S. Tretiak, P. M. Ajayan, M. G. Kanatzidis, J. Even, J. J. Crochet, A. D. Mohite, PEROVSKITE PHYSICS Extremely efficient internal exciton dissociation through edge states in layered 2D perovskites. *Science* **355**, 1288-1291 (2017).
5. H. Tsai, W. Nie, J. C. Blancon, C. C. Stoumpos, R. Asadpour, B. Harutyunyan, A. J. Neukirch, R. Verduzco, J. J. Crochet, S. Tretiak, L. Pedesseau, J. Even, M. A. Alam, G. Gupta, J. Lou, P. M. Ajayan, M. J. Bedzyk, M. G. Kanatzidis, High-efficiency two-dimensional Ruddlesden-Popper perovskite solar cells. *Nature* **536**, 312-316 (2016).
6. Nicholas Rolston, Brian L Watson, Colin D Bailie, Michael D McGehee, João P Bastos, Robert Gehlhaar, Jueng-Eun Kim, Doojin Vak, Arun Tej Mallajosyula, Gautam Gupta, Mechanical integrity of solution-processed perovskite solar cells. *Extreme Mechanics Letters* **9**, 353-358 (2016).
7. L. Pedesseau, D. Saponi, B. Traore, R. Robles, H. H. Fang, M. A. Loi, H. Tsai, W. Nie, J. C. Blancon, A. Neukirch, S. Tretiak, A. D. Mohite, C. Katan, J. Even, M. Kepenekian, Advances and Promises of Layered Halide Hybrid Perovskite Semiconductors. *ACS Nano* **10**, 9776-9786 (2016).
8. W. Nie, J. C. Blancon, A. J. Neukirch, K. Appavoo, H. Tsai, M. Chhowalla, M. A. Alam, M. Y. Sfeir, C. Katan, J. Even, S. Tretiak, J. J. Crochet, G. Gupta, A. D. Mohite, Light-activated photocurrent degradation and self-healing in perovskite solar cells. *Nat Commun* **7**, 11574 (2016).
9. A. J. Neukirch, W. Nie, J. C. Blancon, K. Appavoo, H. Tsai, M. Y. Sfeir, C. Katan, L. Pedesseau, J. Even, J. J. Crochet, G. Gupta, A. D. Mohite, S. Tretiak, Polaron Stabilization by Cooperative Lattice Distortion and Cation Rotations in Hybrid Perovskite Materials. *Nano Lett* **16**, 3809-3816 (2016).
10. Arun Tej Mallajosyula, Kasun Fernando, Shaivi Bhatt, Akhilesh Singh, Bruce W Alphenaar, Jean-Christophe Blancon, Wanyi Nie, Gautam Gupta, Aditya D Mohite, Large-area hysteresis-free perovskite solar cells via temperature controlled doctor blading under ambient environment. *Applied Materials Today* **3**, 96-102 (2016).
11. Jean-Christophe Blancon, Wanyi Nie, Amanda J Neukirch, Gautam Gupta, Sergei Tretiak, Laurent Cognet, Aditya D Mohite, Jared J Crochet, The Effects of Electronic Impurities and Electron-Hole Recombination Dynamics on Large-Grain Organic-Inorganic Perovskite Photovoltaic Efficiencies. *Advanced Functional Materials* **26**, 4283-4292 (2016).
12. H. H. Tsai, W. Y. Nie, P. Cheruku, N. H. Mack, P. Xu, G. Gupta, A. D. Mohite, H. L. Wang, Optimizing Composition and Morphology for Large-Grain Perovskite Solar Cells via Chemical Control. *Chemistry of Materials* **27**, 5570-5576 (2015).
13. W. Nie, H. Tsai, R. Asadpour, J. C. Blancon, A. J. Neukirch, G. Gupta, J. J. Crochet, M. Chhowalla, S. Tretiak, M. A. Alam, H. L. Wang, A. D. Mohite, Solar cells. High-efficiency solution-processed perovskite solar cells with millimeter-scale grains. *Science* **347**, 522-525 (2015).

Research Interests

His research interest involves understanding and controlling structure-correlated charge transport and photo-physical processes in materials (nanoscale and bulk) and to integrate these materials into proof-of-concept high-efficiency optoelectronic and energy devices such as solar cells, light emitting diodes, lasers, photo-electrochemical cells (for H₂ generation or CO₂ reduction), photo-detectors, flexible electronics, radiation detectors and sensors. He is an expert in the application of correlated interface sensitive techniques such as photocurrent, time-resolved PL, electro-absorption, capacitance, impedance spectroscopy, etc., to investigate the charge and energy transfer processes in materials.