Pierre Darancet

EDUCATION AND TRAINING

Postdoctoral Research Scientist of Applied Physics, Columbia University, 2012 – 2014

Postdoctoral Fellow, Molecular Foundry, Lawrence Berkeley National Laboratory, 2008 – 2012

Ph.D., Université Joseph Fourier, Grenoble, France, Physics, 2008

M.S., Université Paul Sabatier, Toulouse, France, Physics, 2005

M.S., Institut National des Sciences Appliquées, Toulouse, France, Applied Physics, 2005

REASEARCH AND PROFESSIONAL EXPERIENCE

2014 - present Assistant Scientist, Argonne National Laboratory (Argonne)

Principal investigator at the Center for Nanoscale Materials, a DOE Nanoscale Science user facility. Development and application of first-principles methods to model nonequilibrium charge, energy, and heat transport.

2016 - present Fellow, Northwestern-Argonne Institute for Science and Engineering

SELECTED PUBLICATIONS

1. Adamska, L., Sadasivam, S., Foley IV, J. J., Darancet, P., and Sharifzadeh, S., First-Principles Investigation of Borophene as a Monolayer Transparent Conductor, *Journal of Physical Chemistry C*, 122, 7, 4037 (2018). https://dx.doi.org/10.1021/acs.jpcc.7b10197
2. Sadasivam, S., Chan, M. K. Y., and Darancet P., Theory of Thermal Relaxation of Electrons in Semiconductors*, Physical Review Letters*, 119, 136602 (2017). https://dx.doi.org/10.1103/PhysRevLett.119.136602
3. Diroll, B. T., Fedin, I., Darancet, P., Talapin, D. V., and Schaller R. D., Surface-Area-Dependent Electron Transfer Between Isoenergetic 2D Quantum Wells and a Molecular Acceptor, *Journal of the American Chemical Society 138*, 35, 11109 (2016). https://dx.doi.org/10.1021/jacs.6b06572
4. Li, H., Kim, N.T., Su, T. A., Steigerwald, M. L., Nuckolls, C., Darancet, P., Leighton, J. L., and Venkataraman, L., Mechanism for Si–Si Bond Rupture in Single Molecule Junctions, *Journal of the American Chemical Society* 138, 161159 *cover article* (2016). https://dx.doi.org/10.1021/jacs.6b10700
5. Kotiuga, M., Darancet, P., Arroyo, C. R., Venkataraman, L., Neaton, J. B., Adsorption-induced solvent-based electrostatic gating of charge transport through molecular junctions, *Nano Letters*, 15, 7, 4498-4503 (2015). https://dx.doi.org/10.1021/acs.nanolett.5b00990
6. Darancet, P., Millis, A. J., and Marianetti, C. A., Three-dimensional metallic and two-dimensional insulating behavior in octahedral tantalum dichalcogenides, *Physical Review B*, 90, 4, 045134 (2014). https://dx.doi.org/https://doi.org/10.1103/PhysRevB.90.045134
7. Darancet, P., Widawsky, J. R., Choi, H. J., Venkataraman, L., and Neaton, J. B., Quantitative current-voltage characteristics in molecular junctions from first principles, *Nano Letters*, 12, 6250 (2012). https://dx.doi.org/10.1021/nl3033137
8. Chen, Z., Darancet, P., Wang, L., Crowther, A. C., Gao, Y., Dean, C. R., Taniguchi, T., Watanabe, K., Hone, J., Marianetti, C. A., and Brus L. E. Physical Adsorption and Charge Transfer of Molecular Br_2 on Graphene, *ACS Nano 8*, 3, 2943 (2014). https://dx.doi.org/10.1021/nn500265f

9. Sharifzadeh, S., Darancet, P., Kronik, L., Neaton J. B., Low-Energy Charge-Transfer Excitons in Organic Solids from First-Principles: The Case of Pentacene, *The Journal of Physical Chemistry Letters 4*, 13, 2197-2201 (2013). https://dx.doi.org/10.1021/jz401069f
10. Widawsky, J. R., Darancet, P., Neaton, J. B., and Venkataraman, L., Simultaneous Determination of Conductance and Thermopower of Single Molecule Junctions, *Nano Letters 12*, 1, 354-358 (2012). https://dx.doi.org/10.1021/nl203634m

SYNERGISTIC ACTIVITIES

1. Conference Organization and Focus Session Organizer, Electron, ion, exciton transport in nanostructures, American Physical Society March Meeting, 2016; Focus Session Organizer, Electron, phonon, exciton transport in nanostructures, American Physical Society March Meeting, 2018.
1. Mentorship, Argonne Postdoctoral Mentorship program, Dr. Liang Li (Argonne), 2015 - present; Dr. Matthew Sykes (Argonne), 2015 - 2018; Dr Peijun Guo (Argonne), 2017 - present.
2. Outreach, Judge for District 58 Science Fair, 2015 - 2018, Argonne Science Bowl, 2016.

COLLABORATORS AND CO-EDITORS

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Taniguchi	Takashi	National Insitute for Materials Science, Tsukuba, Japan

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Watanabe	Kenji	National Insitute for Materials Science, Tsukuba, Japan
Weiss	Emily	Northwestern University

GRADUATE AND POSTDOCTORAL ADVISORS AND ADVISEES

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