PIERRE DARANCET

Center for Nanoscale Materials
Northwestern-Argonne Institute for Science and Engineering
Argonne National Laboratory
Building 440, 9700 S Cass Ave.
Lemont, IL 60539
Tel: (630) 252-4709; Fax: (630) 252-4646
E-mail: pdarancet@anl.gov
http://www.anl.gov/cnm/person/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. Olding, J.N., Henning, A., Dong, J.T., Zhou, Q., Moody, M.J., Smeets, P.J., Darancet, P., Weiss, E.A. and Lauhon, L.J., Charge Separation in Epitaxial SnS/MoS2 Vertical Heterojunctions Grown by Low-Temperature Pulsed MOCVD, *ACS Applied Materials & Interfaces*, 11(43), 40543-40550 (2019). https://doi.org/10.1021/acsami.9b14412
2. Zhou, Q., Cho, Y., Yang, S., Weiss, E.A., Berkelbach, T.C. and Darancet, P., Large Band Edge Tunability in Colloidal Nanoplatelets. *Nano letters*, *19*(10), 7124-7129 (2019).
3. Amsterdam, S. H., Stanev, T.K., Zhou, Q., Lou, A. J.-T., Bergeron, H., Darancet, P., Hersam, M.C., Stern, N.P., and Marks, T.J. Electronic Coupling in Metallophthalocyanine–Transition Metal Dichalcogenide Mixed-Dimensional Heterojunctions, *ACS Nano* 13 (4), 4183-4190 (2019). https://doi.org/10.1021/acsnano.8b09166
4. 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
5. 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
6. 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
7. 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

8. 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
9. 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
10. 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

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.
2. Mentorship, Argonne Postdoctoral Mentorship program, Dr. Liang Li (Argonne), 2015 - 2019; Dr. Matthew Sykes (Argonne), 2015 - 2018; Dr. Peijun Guo (Argonne), 2017 - 2019. Dr. Matthew Otten (Argonne), 2017 - present.
1. Outreach, Judge for District 58 Science Fair, 2015 - 2018, Argonne Science Bowl, 2016.

EDUCATION AND TRAINING

HONORS AND AWARDS

Ph.D. Fellowship, French Ministry of Education, Research and Technology, MENRT (2005-2008); Graduated with Honors (1st class), Université Paul Sabatier, Toulouse (2005)