Stanford

Tom Hopper

Postdoctoral Scholar, Materials Science and Engineering

Bio

BIO

Tom seeks to fast track the development of new optoelectronic materials and devices by elucidating their properties at the most fundamental level. During his doctoral research and subsequent EPSRC Doctoral Prize Fellowship at Imperial College London, Tom played a pioneering role in the design and construction of femtosecond optical control experiments, and applied them to pinpoint efficiency-limiting processes in emerging photovoltaic systems based on organic, hybrid and nanoscale materials.

As a TomKat Postdoctoral Fellow in Sustainable Energy in the Lindenberg Group, Tom will deploy state-of-the-art ultrafast optical and structural probes at Stanford and SLAC to visualize and manipulate energy transport in novel materials systems made from low-dimensional semiconductors.

HONORS AND AWARDS

- Semiconductor Physics PhD Thesis Prize, The Institute of Physics (Sep 2021)
- Postdoctoral Fellowship in Sustainable Energy, TomKat Center, Stanford University (Jul 2021 - Present)
- Best Thesis Prize, Department of Chemistry, Imperial College London (Mar 2021)
- Energy Sector PhD Thesis Award (3rd prize), Royal Society of Chemistry (Mar 2021)
- Doctoral Prize Fellowship, EPSRC (Oct 2020 - Jun 2021)
- The Edward Steers Award, The Association of British Spectroscopists (Feb 2020)
- Best Speaker Prize (across all departments), Faculty of Natural Sciences, Imperial College London (Sep 2019)
- Best Talk Prize, Department of Chemistry, Imperial College London (Jul 2019)
- Sustainable Energy & Fuels Talk Prize for Best Communication, Centre for Processable Electronics, Imperial College London (Jun 2019)
- Early Career Travel Grant, Royal Society of Chemistry (Jun 2019)
- Research Excellence Award, MKS Instruments & SPIE (May 2019)
- Conference Bursary, Wilkinson Charitable Trust for Inorganic Chemistry (May 2019)
- C. R. Barber Trust Conference Bursary, The Institute of Physics (Apr 2019)
- Research Student Conference Bursary, The Institute of Physics (Mar 2019)
- International Conference Bursary, SUPERGEN SuperSolar (Feb 2019)
- Best Science Poster, Centre for Processable Electronics (Jun 2018)
- Doctoral Training Scholarship, EPSRC (Sep 2016 - Dec 2019)
- Roger Griffin Prize, Newcastle University (Jul 2016)
- Chemistry Excellence Prize, Newcastle University (Oct 2015)

- Undergraduate Research Bursary, Royal Society of Chemistry (Jun 2015 - Jul 2015)
- Society of Chemical Industry Prize, Newcastle University (Sep 2014)
- Vacation Student Scholarship, Newcastle University (Jul 2014 - Aug 2014)
- Society of Chemical Industry Prize, Newcastle University (Sep 2013)
- Access Scholarship, Newcastle University (Sep 2012 - Jul 2016)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chartered Chemist (CChem), Royal Society of Chemistry (2021 - present)
- Member of The Institute of Physics (MInstP), The Institute of Physics (2019 - present)
- Member of Royal Society of Chemistry (MRSC), Royal Society of Chemistry (2019 - present)
- Registered Scientist (RSci), The Science Council (2018 - present)

PROFESSIONAL EDUCATION

- PhD, Imperial College London , Physical Chemistry (2020)
- MChem, Newcastle University , Chemistry (2016)

STANFORD ADVISORS

- Aaron Lindenberg, Postdoctoral Research Mentor
- Aaron Lindenberg, Postdoctoral Faculty Sponsor

LINKS

- @ThomasRHopper: https://twitter.com/ThomasRHopper
- Google Scholar: https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwiH_Pnx3NfxAhVFsp4KHUokAbUQFjAAegQIBxAD&url=http%3A%2F%2Fscholar.google.com%2Fcitations%3Fuser%3DLXdJlfYAAAAJ%26hl%3Den&usg=AOvVaw3KVn56NmEnu4-RGmIaU0X-
- TomKat profile: https://tomkat.stanford.edu/person/tom-hopper
- Lindenberg Group: http://web.stanford.edu/group/lindenberg/cgi-bin/drupal/
- Photonics at Thermodynamic Limits website: https://ptl.stanford.edu/people/postdoctoral-scholars

Research & Scholarship

LAB AFFILIATIONS

- Aaron Lindenberg, Lindenberg Group (7/16/2021)

Publications

PUBLICATIONS

- **Multipulse Terahertz Spectroscopy Unveils Hot Polaron Photoconductivity Dynamics in Metal-Halide Perovskites.** *The journal of physical chemistry letters*
  Zheng, X., Hopper, T. R., Gorodetsky, A., Maimaris, M., Xu, W., Martin, B. A., Frost, J. M., Bakulin, A. A.
  2021: 8732-8739
- **Materials, Photophysics and Device Engineering of Perovskite Light-Emitting Diodes.** *Reports on progress in physics. Physical Society (Great Britain)*
  Chen, Z., Li, Z., Hopper, T., Bakulin, A. A., Yip, H.
  2021
- **Kinetic modelling of intraband carrier relaxation in bulk and nanocrystalline lead-halide perovskites** *PHYSICAL CHEMISTRY CHEMICAL PHYSICS*
  Hopper, T. R., Jeong, A., Gorodetsky, A. A., Krieg, F., Bodnarchuk, M., Huang, X., Lovrincic, R., Kovalenko, M., Bakulin, A. A.
  2020; 22 (31): 17605–11

- **Hot Carrier Dynamics in Perovskite Nanocrystal Solids: Role of the Cold Carriers, Nanoconfinement, and the Surface** *NANO LETTERS*
  Hopper, T. R., Gorodetsky, A., Jeong, A., Krieg, F., Bodnarchuk, M., Maimaris, M., Chaplain, M., Macdonald, T. J., Huang, X., Lovrincic, R., Kovalenko, M., Bakulin, A. A.
  2020; 20 (4): 2271–78

- **Control of Donor-Acceptor Photophysics through Structural Modification of a "Twisting" Push-Pull Molecule** *CHEMISTRY OF MATERIALS*
  Hopper, T. R., Qian, D., Yang, L., Wang, X., Zhou, K., Kumar, R., Ma, W., He, C., Hou, J., Gao, F., Bakulin, A. A.
  2019; 31 (17): 6860–69

- **Impact of Marginal Exciton-Charge-Transfer State Offset on Charge Generation and Recombination in Polymer:Fullerene Solar Cells** *ACS ENERGY LETTERS*
  Vezie, M. S., Azzouzi, M., Telford, A. M., Hopper, T. R., Sieval, A. B., Hummelen, J. C., Fallon, K., Bronstein, H., Kirchartz, T., Bakulin, A. A., Clarke, T. M., Nelson, J.
  2019; 4 (9): 2096–2103

- **Block Junction-Functionalized All-Conjugated Donor-Acceptor Block Copolymers** *ACS APPLIED MATERIALS & INTERFACES*
  Nuebling, F., Hopper, T. R., Kuei, B., Komber, H., Untilova, V., Schmidt, S. B., Brinkmann, M., Gomez, E. D., Bakulin, A. A., Sommer, M.
  2019; 11 (1): 1143–55

- **Efficient non-fullerene organic solar cells employing sequentially deposited donor-acceptor layers** *JOURNAL OF MATERIALS CHEMISTRY A*
  Zhang, J., Kan, B., Pearson, A. J., Parnell, A. J., Cooper, J. K., Liu, X., Conaghan, P. J., Hopper, T. R., Wu, Y., Wan, X., Gao, F., Greenham, N. C., Bakulin, et al
  2018; 6 (37): 18225–33

- **Ultrafast Intraband Spectroscopy of Hot-Carrier Cooling in Lead-Halide Perovskites** *ACS ENERGY LETTERS*
  Hopper, T. R., Gorodetsky, A., Frost, J. M., Mueller, C., Lovrincic, R., Bakulin, A. A.
  2018; 3 (9): 2199–2205

- **Design rules for minimizing voltage losses in high-efficiency organic solar cells** *NATURE MATERIALS*
  Qian, D., Zheng, Z., Yao, H., Tress, W., Hopper, T. R., Chen, S., Li, S., Liu, J., Chen, S., Zhang, J., Liu, X., Gao, B., Ouyang, et al
  2018; 17 (8): 703–9

- **Field-Assisted Exciton Dissociation in Highly Efficient PffBT4T-2OD:Fullerene Organic Solar Cells** *CHEMISTRY OF MATERIALS*
  Weu, A., Hopper, T. R., Lami, V., Kress, J. A., Bakulin, A. A., Vaynzof, Y.
  2018; 30 (8): 2660–67