

Sheng-Ting Hung

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Education

- Ph.D. in Physics, Washington State University, USA
- Ph.D. in Chemistry, Katholieke Universiteit Leuven, Belgium
- M.S. in Physics, National Sun Yat-sen University, Taiwan
- B.S. in Physics, Fu Jen Catholic University, Taiwan

Research Areas

- Biophysics
- Microfluidics
- Molecular spectroscopy
- Organic materials

Experience

- Chief Scientific Officer – MedFluid, Taiwan
- Postdoctoral Research Associate – JILA, University of Colorado Boulder, USA
- Research Assistant – Department of Physics and Astronomy, Washington State University, USA
- Research Assistant – Departement Chemie, Katholieke Universiteit Leuven, Belgium
- Visiting Researcher – Department of Chemistry, Kansas State University, USA
- Research Assistant – Department of Physics, National Sun Yat-sen University, Taiwan

Invited Talks

1. “New strategies and tools for directed evolution of red fluorescent proteins.” *Institute of Biophotonics Seminar*, National Yang-Ming University, Taipei, Taiwan, Oct. 2019
2. “Developing Red Fluorescent Proteins – Tools and Strategies.” *2018 Annual Meeting of the APS Four Corners Section*, Salt Lake City, UT, Oct. 2018
3. “Molecular symmetry as a constraint preventing the many-state catastrophe of fundamental limits of the first hyperpolarizability.” *Foundations of Nonlinear Optics*, Bethlehem, PA, Aug. 2015
4. “Self-healing in dye-doped polymer matrices: A new phenomenon and a 150-year-old problem.” *WSU OSA/SPIE graduate student lecture*, Pullman, WA, Nov. 2014

Contributed Talks

1. “Biotech pitch – MedFluid Co Ltd.” Phar East 2020, Asia's Pharma & Biotech Virtual Festival, Dec. 2020
2. “Taiwan Business Day – MedFluid Co Ltd.” Taiwan Innovation Fair&Share, Virtual, Oct.-Nov. 2020 – **The 1st place Taiwan Explorer Award**
3. “Microfluidics: an intersection between physics and biology.” *Leaders in Future Trends Conference*, Hsin-Chu, Taiwan, Oct. 2019
4. “High throughput fluorescence lifetime and dual color fluorescence activated droplet microfluidic sorter.” *CYTO 2019*, Vancouver, Canada, Jun. 2019
5. “Mechanism for reversible photodegradation of 1-substituted aminoanthraquinones doped in poly(methyl methacrylate).” *249th American Chemical Society National Meeting*, Denver, CO, Mar. 2015

Poster Presentations

1. “Experimental investigation of reversible photodegradation of Disperse Orange 11 doped in poly(methyl methacrylate).” *Materials Research Society Fall Meeting*, Boston, MA, Nov. 30 – Dec. 5, 2014
2. “The role of the polymer host on reversible photodegradation in Disperse Orange 11 dye.” *SPIE Optics + Photonics 2012 meeting*, San Diego, CA, Aug. 2012

Peer Reviewed Publications

1. Srijit Mukherjee, Connor Thomas, Ryan Wilson, Emma Simmerman, **Sheng-Ting Hung***, Ralph Jimenez, “Characterizing Dark State Kinetics and Single Molecule Fluorescence of FusionRed and FusionRed-MQ at Low Irradiances.” *ChemRxiv*, (2022) DOI: 10.26434/chemrxiv-2022-2dr03
2. S. Mukherjee, **S. T. Hung**, N. Douglas, P. Manna, C. Thomas, A. Ekrem, A. E. Palmer, R. Jimenez, “Engineering of a brighter variant of the FusionRed fluorescent protein using lifetime flow-cytometry and structure-guided mutations.” *Biochemistry* **59**, 3669 (2020).
3. **S. T. Hung**, S. Mukherjee, R. Jimenez, “Enrichment of rare events using a multi-parameter high throughput microfluidic droplet sorter.” *Lab Chip* **20**, 834 (2020).
4. P. Manna, **S. T. Hung**, S. Mukherjee, P. Friis, D. Simpson, M. Lo, A. E. Palmer, R. Jimenez, “Directed Evolution of Excited State Lifetime and Brightness in FusionRed using a Microfluidic Sorter.” *Integr. Biol.* **10**, 516 (2018).
5. E. Braselmann, A. Wierzba, J. Polaski, M. Chrominski, Z. Holmes, **S. T. Hung**, D. Batan, J. Wheeler, R. Parker, R. Jimenez, D. Gryko, R. Batey, A. E. Palmer, “Riboglow: a multicolor riboswitch-based platform for live cell imaging of mRNA and small non-coding RNA in mammalian cells.” *Nat. Chem. Biol.* **14**, 964 (2018).
6. B. Anderson, **S. T. Hung**, M. G. Kuzyk, “Imaging studies of temperature dependent photodegradation and self-healing in disperse orange 11 dye-doped polymers.” *J. Chem. Phys.* **145**, 024901 (2016).
7. **S. T. Hung***, A. Bhuyan, K. Schademan, J. Steverlynck, M. D. McCluskey, G. Koeckelberghs, K. Clays, M. G. Kuzyk, “Spectroscopic studies of the mechanism of reversible photodegradation of aminoanthraquinone-doped polymers.” *J. Chem. Phys.* **144**, 114902 (2016).
8. B. Anderson, **S. T. Hung**, M. G. Kuzyk, “Wavelength dependence of reversible photodegradation of disperse orange 11 dye-doped PMMA thin films.” *JOSA B* **32** (6), 1043 (2015).
9. B. Anderson, **S. T. Hung**, M. G. Kuzyk, “The effect of pump depletion on reversible photodegradation.” *Optics Communications* **318**, 180 (2014).
10. B. Anderson, **S. T. Hung**, M. G. Kuzyk, “Influence of an electric field on photodegradation and self-healing in disperse orange 11 dye-doped PMMA thin films.” *JOSA B* **30** (12), 3193 (2013).
11. S. K. Ramini, B. Anderson, **S. T. Hung**, M. G. Kuzyk, “Experimental tests of a new correlated chromophore domain model of self-healing in a dye-doped polymer.” *Polym. Chem.* **4**, 4948 (2013).
12. J. Perez-Moreno, **S. T. Hung**, M. G. Kuzyk, J. Zhou, S. K. Ramini, K. Clays, “Experimental verification of a self-consistent theory of the first-, second-, and third-order (non)linear optical response.” *Phys. Rev. A* **84**, 033837 (2011).
13. T. Ishizuka, L. E. Sinks, K. Song, **S. T. Hung**, A. Nayak, K. Clays, M. J. Therien, “The Roles of Molecular Structure and Effective Optical Symmetry in Evolving Dipolar Chromophoric Building Blocks to Potent Octopolar Nonlinear Optical Chromophores.” *J. Am. Chem. Soc.* **133** (9), 2884 (2011). – **JACS Select #14: Advances at the Frontiers of Photochemical Sciences**
14. T. V. Duncan, K. Song, **S. T. Hung**, I. Miloradovic, A. Nayak, A. Persoons, T. Verbiest, M. J. Therien, K. Clays, “Molecular Symmetry and Solution-Phase Structure Interrogated by Hyper-Rayleigh Depolarization Measurements: Elaborating Highly Hyperpolarizable D₂-Symmetric Chromophores.” *Angewandte Chemie International Edition* **47** (16), 2978 (2008).
15. B. J. Coe, J. L. Harries, M. Helliwell, B.S. Brunschwig, J. A. Harris, I. Asselberghs, **S. T. Hung**, K. Clays, P. N. Horton, M. B. Hursthouse, “Syntheses and Quadratic Optical Nonlinearities of Ruthenium(II) Complexes with Ethynyl-Connected N-Methylpyridinium Electron Acceptors.” *Inorg. Chem.* **45** (3), 1215 (2006).

16. B. J. Coe, J. A. Harris, J. J. Hall, B.S. Brunshwig, S. T. Hung, W. Libaers, K. Clays, S. J. Coles, P. N. Horton, M. E. Light, M. B. Hursthouse, J. Garin, J. Orduna, "Syntheses and Quadratic Nonlinear Optical Properties of Salts Containing Benzothiazolium Electron-Acceptor Groups." *Chem. Mater.* **18** (25), 5907 (2006).
17. S. T. Hung, C. H. Wang and A. M. Kelley, "Resonant Raman spectra and first molecular hyperpolarizabilities of strongly charge-transfer molecules." *J. Chem. Phys.* **123**, 144503 (2005).

Conference Proceedings

1. S. T. Hung, S. K. Ramini, D. G. Wyrick, K. Clays, M. G. Kuzyk, "The role of the polymer host on reversible photodegradation in Disperse Orange 11 dye." *Proc. SPIE* 8474, Optical Processes in Organic Materials and Nanostructures, 84741A (2012). DOI: 10.1117/12.929944
2. B. Anderson, S. T. Hung, M. G. Kuzyk, "Electric field dependent decay and recovery of DO11 doped into PMMA thin films: beyond 100% recovery?" *Proc. SPIE* 8530, Laser-Induced Damage in Optical Materials: 2012, 85301G (2012). DOI: 10.1117/12.977203
3. B. Anderson, S. T. Hung, M. G. Kuzyk, "Measuring electric field dependent photodegradation and recovery of disperse orange 11 dye doped polymer thin films using photoconductivity and digital imaging microscopy." *Proc. SPIE* 8519, Nanophotonics and Macrophotonics for Space Environments VI, 85190H (2012). DOI: 10.1117/12.929776