

Wednesday Morning

Achieving Energy & Charge Transfer with Plasmonic Systems

Eric Grumstrup and Kallie Willets, *Presiding*

8:30 (294). Antenna-reactor complexes for plasmonic photocatalysis. **N.J. Halas**

9:00 (295). Femtosecond stimulated Raman microscopy of charge transfer on nanometer and micrometer length scales. **R.R. Frontiera**

9:30 (296). All-Metal optical power conversion via tunneling of plasmonic hot electrons. **M.T. Sheldon**, N. Hogan, S. Wu

9:50 (297). Strong coupling between surface plasmon polaritons and excitons for silver nanowires. G. Beane, B. Brown, **G.V. Hartland**

10:20 INTERMISSION.

10:40 (298). Probing the optical responses in metallic, alloyed, and semiconductor nanostructures with fast electron spectroscopy. **D.J. Masiello**

11:10 (299). Spectro-electrochemical microscopy on single plasmonic nanostructures.

W. Chang, B.S. Hoener, H. Zhang, T. Heiderscheit, S.R. Kirchner, A.S. De Silva Indrasekara, R. Baiyasi, Y. Cai, P.J. Nordlander, S. Link, C.F. Landes

11:25 (300). Plasmon rulers as optical transducers for nanoscale charge transfer. S. Lerch, **B.M. Reinhard**

11:45 (301). Observation of single molecule plasmon-driven electron transfer in isotopically edited 4,4'-bipyridine gold nanosphere oligomers. **E. Sprague-Klein**, M.O. McAnally, D. Zhdanov, A. Zrimsek, V.A. Apkarian, T. Seideman, G.C. Schatz, R.P. Van Duyne

Wednesday Afternoon

Using Quantum Dots to Direct Charge & Energy Transfer

Matt Sheldon and Ming Lee Tang, *Presiding*

1:30 (345). Interfacial charge transfer as a probe of the electrostatic potential of a colloidal quantum dot. C. He, **E.A. Weiss**

2:00 (346). Excited state dynamics at nanoscale interfaces for solar energy harvesting: Time-domain Ab initio studies. **O.V. Prezhdo**

2:30 (347). Improving energy migration in nanocrystal solids ligand exchanged with exciton-delocalizing ligands. **M.S. Azzaro**, A. Dodin, D.Y. Zhang, A.P. Willard, S.T. Roberts

2:45 (348). Interfacial control of colloidal heteronanostructures to control single particle emission in Cd-based and CuIn-based chalcogenide quantum dots.

C.D. Heyes

3:05 Intermission.

3:25 (349). Directing triplets across the nanocrystal-molecule interface. **M.L. Tang**, Z. Huang, P. Xia, E. Moses

3:55 (350). Colloidal semiconductor nanocrystal photocatalysts: Teaching an old dot new tricks. C. Liu, F. Qiu, L. Frenette, R. Burke, **T.D. Krauss**

4:25 (351). Charge-trapping at the surfaces of nanocrystals vs charge-transfer on the nanoscale. **P. Kambhampati**

4:45 (352). Biexciton and trion energy transfer from CdSe/CdS giant nanocrystals to Si substrates. T. Guo, S. Sampat, S.M. Rupich, J.A. Hollingsworth, M. Buck, H. Htoon, Y.J. Chabal, Y. Gartstein, **A. Malko**

5:05 (353). Photoreductive dissolution of cerium oxide nanoparticles upon UV irradiation. **N.W. Pettinger**, S. Froebel, J. Empey, S. Natarajan, B. Wynne, B. Kohler

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ENERGY & CHARGE TRANSFER AT NANOSCALE INTERFACES

Libai Huang
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Organizers

Morial Convention Center

Room 223

March 18-21, 2018

Sunday Morning

Interfaces in Electrochemistry & Catalysis

Wei-Shun Chang and Josh Vura-Weis, *Presiding*

8:30 (29). Exciton transport, coherent delocalization, auger annihilation and optical gain in 2D colloidal quantum wells. **T. Lian**

9:00 (30). From indirections find directions out. **M.A. Ratner**

9:30 (31). Ultrafast direct electron transfer at optoelectronic material interfaces.

W. Xiong, B. Xiang, Y. Li, H. Pham, F. Paesani

10:00 (32). Surface electron dynamics in hematite ($\alpha\text{-Fe}_2\text{O}_3$): Correlation between ultrafast surface electron trapping and small polaron formation. **L. Baker**, J. Husek, A. Cirri, S. Biswas

10:20. INTERMISSION

10:40 (33). Elucidating how photoexcited semiconductor nanocrystals drive redox catalysis. **G. Dukovic**

11:10 (34). Influence of surface-active molecules on reactions at liquid interfaces: Molecular dynamics studies. **I. Benjamin**, J.J. Karnes

11:40 (35). Controlling energy flow in plasmonic photocatalysis through the design of hybrid plasmonic nanostructures. **S. Linic**, U. Aslam, S. Chavez

12:00 (36). Catalytic reactions on FeN₄/C site of Fe, N-functionalized carbon nanotubes as cathode catalyst for hydrogen fuel cells. **F. Gao**, G. Zhao,

D. Bagayoko, D. Liu

Sunday Afternoon

Emerging Techniques for Probing Nanoscale Structure & Dynamics

Robert Baker and Wei Xiong, *Presiding*

1:30 (70). Multimodal tip-enhanced spectroscopy. **M.B. Raschke**

2:00 (71). Chemically and structurally correlated carrier and exciton transport in solution-processed semiconductors. A. Hill, C.L. Kennedy, E. Massaro,

E. Grumstrup

2:30 (72). Ultrafast two-dimensional infrared spectroscopy of disordered surfactant interfaces. C.P. Baryames, E. Ma, **C.R. Baiz**

2:50 (73). Optical label- and model-free probe of the surface potential of nano and microscopic objects in aqueous solution. **S. Roke**

3:10 INTERMISSION

3:30 (74). Carrier dynamics in plasmonic nanostructures. **S. Link**

3:50 (75). Imaging the electronic structure of TIPS-pentacene microcrystals using two-dimensional white-light microscopy. **N.M. Kearns**, A.C. Jones, J. Ho, J.T. Flach, M.T. Zanni

4:10 (76). Femtosecond XUV transient absorption enables carrier- and element-specific measurement of interfacial charge transfer. **J. Vura-Weis**

4:30 (77). Understanding mislocalization error in plasmon enhanced super-resolution fluorescence microscopy. **H.J. Goldwyn**, D.J. Masiello

4:45 (78). Band-selective ballistic energy transport in oligomers characterized by relaxation-assisted 2D-IR spectroscopy. **L. Qasim**, Y. Yue, A. Kurnosov, A. Burin, I.V. Rubtsov

5:00 (79). Statistical mechanical modeling of excitons in condensed phases.

R. Remsing

Monday Morning

Materials for Photon Upconversion & Downconversion

Gabriela Schlau-Cohen and Adam Willard, *Presiding*

8:30 (120). Resolving ultrafast exciton migration in organic solids at the nanoscale.

S.B. Penwell, L.D. Ginsberg, R. Noriega, **N.S. Ginsberg**

9:00 (121). Manipulating energy and spin in hybrid organic-inorganic semiconductors. A.K. Le, J.A. Bender, A.P. Moon, R. Pandey, D.E. Cotton, E.K. Raulerson, B.A. Renard,

S.T. Roberts

9:30 (122). Role of charge transfer states and vibronic coupling in singlet fission studied using 2D electronic spectroscopy. **A. Mandal**, M. Chen, E.D. Foszycz, R. Young, M.R. Wasielewski

9:45 (123). A generalized Ovchinnikov's rule can predict the biexciton boundedness in covalently linked singlet fission chromophores. V. Abraham, **N. Mayhall**

10:05 Intermission.

10:25 (124). Mechanisms of triplet pair separation and transport following singlet fission in functionalized pentacenes. **J.B. Asbury**

10:55 (125). Control of energy flow dynamics between photoactive ligands and semiconductor nanostructures. **J.C. Johnson**, M.C. Beard, J.E. Anthony, D. Kroupa, M. Martinez, D. Arias, J. Blackburn, M. Carroll

11:15 (126). Functional mode singlet fission theory. **H. Chen**

11:35 (127). Harvesting triplet excitons from intramolecular singlet fission. **F. Conrad-Burton**, F. Geyer, K. Miyata, C.P. Nuckolls, X. Zhu

11:50 (128). Aggregation induced vibrational displacements dominate excited state relaxation: Proposed singlet fission active polymers. **B. Datko**, D. Portlock, Z. Zhang, M. Williams, Y. Qin, R. Prasankumar, J.K. Grey

Monday Afternoon

Energy Transfer in Biological & Synthetic Systems

Carlos Baiz and Aritra Mandal, *Presiding*

1:30 (172). Reducing energy losses and capitalizing on triplet-triplet annihilation at organic donor/acceptor interfaces. **B.P. Rand**

2:00 (173). Energetic disorder enhances exciton dissociation at the organic donor-acceptor interface. **A. Willard**

2:30 (174). Elucidating the energy and electron transfer dynamics in a self-assembled bilayer upconversion DSSC. **T. Dilbeck**, J. Wang, Y. Zhou, A. Olsson, K. Hanson

2:45 (175). Ultrafast recombination dynamics in dye-sensitized SnO₂/TiO₂ core/shell films. **M.K. Gish**, M.K. Brennaman, A. Lapidés, J.L. Templeton, T.J. Meyer, J.M. Papanikolas

3:00 Intermission.

3:20 (176). Impact of the membrane-protein interface in photosynthetic light harvesting. **G. Schlau-Cohen**

3:50 (177). Synthetic biological control of quantum optical phenomena. A. Tsargorodska, G. Kodali, J. Mancini, L. Dutton, C. Hunter, P. Törmä, **G.J. Leggett**

4:10 (178). Exploring the multiscale design principles of excitation transport and light harvesting in the photosystem II membrane. **D. Bennett**, G.R. Fleming, K. Amarnath

Monday Afternoon

(continued)

4:25 (179). Bio-inspired energy conversion in non-equilibrium nano-systems: Electron-transfer coupled precipitation. **C. Kunstmann-Olsen**, M. Brust

4:40 (180). Understanding the structural evolution in 6,13-bis(triisopropylsilylethynyl) pentacene singlet fission through femtosecond stimulated Raman spectroscopy. **S. Kwang**, R.R. Frontiera

4:55 (181). Resolving inter-chromophoric coupling in tetrakis(perylene diimide) complexes. **D.J. Walwark**, Q. Wu, L. Yu, J.K. Grey

Tuesday Morning

Interfacial Charge Transfer in Emerging Materials

Sean Roberts and Renee Frontiera, *Presiding*

8:30 (240). Probing coupled charge transfer and ion transport in nanostructured thin films. **D.S. Ginger**

9:00 (241). Charge and energy transfer in 2D colloidal semiconductor nanoplatelet quantum wells. B.T. Diroll, C.E. Rowland, I. Fedin, P. Darancet, A.O. Govorov, D.V. Talapin, **R.D. Schaller**

9:30 (242). Energy transfer dynamics and hot electron generation in Mn-doped CsPbX₃ nanocrystals. **D.H. Son**

9:50 (243). Evolution of defects at the lead halide perovskite/graphene oxide interfaces by *In situ* spectroscopy. **M. Acik**, I. Park, R.E. Koritala, G. Lee, R. Rosenberg

10:10 INTERMISSION.

10:30 (244). Charge transfer excitons at van der Waals interfaces. **X. Zhu**

11:00 (245). Interfacial exciton dynamics in atomically thin semiconductors.

W.A. Tisdale

11:30 (246). Highly mobile charge-transfer excitons in two-dimensional tetracene-WS₂ heterostructures. **T. Zhu**, L. Yuan, Y. Zhao, M. Zhou, Y. Wan, J. Mei, L. Huang

11:45 (247). Molecular photoelectronics at a rectifying gallium arsenide interface. **A. Vezzoli**, R. Brooke, N. Ferri, S.J. Higgins, W. Schwarzacher, R. Nichols