

Chemistry 620

Analytical Spectroscopy

Class Reading Candidates: Vote 4/10/08 (turn in with homework portfolio)

Please vote for the four papers (one from each category) which interest you most or suggest an alternative.

Electronic Spectroscopy

Absorption Measurements

1. Klimov, V.I. and D.W. McBranch, *Femtosecond high-sensitivity, chirp-free transient absorption spectroscopy using kilohertz lasers*. Optics Letters, 1998. **23**(4): p. 277-279.
2. Kraabel, B., et al., *Unified picture of the photoexcitations in phenylene-based conjugated polymers: Universal spectral and dynamical features in subpicosecond transient absorption*. Physical Review B, 2000. **61**(12): p. 8501-8515.
3. Ellingson, R.J., et al., *Highly efficient multiple exciton generation in colloidal PbSe and PbS quantum dots*. Nano Letters, 2005. **5**(5): p. 865-871.

Fluorescence Measurements

4. Heinze, K.G., A. Koltermann, and P. Schuille, *Simultaneous two-photon excitation of distinct labels for dual-color fluorescence crosscorrelation analysis*. Proceedings Of The National Academy Of Sciences Of The United States Of America, 2000. **97**(19): p. 10377-10382.
5. Sanchez, E.J., L. Novotny, and X.S. Xie, *Near-field fluorescence microscopy based on two-photon excitation with metal tips*. Physical Review Letters, 1999. **82**(20): p. 4014-4017.
6. Eigen, M. and R. Rigler, *Sorting Single Molecules - Application To Diagnostics And Evolutionary Biotechnology*. Proceedings Of The National Academy Of Sciences Of The United States Of America, 1994. **91**(13): p. 5740-5747.

Vibrational Spectroscopy

Absorption Measurements

7. Rammelsberg, R., et al., *Molecular reaction mechanisms of proteins monitored by nanosecond step-scan FT-IR difference spectroscopy*. Applied Spectroscopy, 1997. **51**(4): p. 558-562.
8. Leeson, D.T., et al., *Protein folding and unfolding on a complex energy landscape*. Proceedings Of The National Academy Of Sciences Of The United States Of America, 2000. **97**(6): p. 2527-2532.
10. Campagnola, P.J., et al., *High-resolution nonlinear optical imaging of live cells by second harmonic generation*. Biophysical Journal, 1999. **77**(6): p. 3341-3349.

Scattering Measurements

11. Qin L., Zou, S., Xue C., Atkinson, A., Schatz G.C, Mirkin, C.A. "Designing, fabricating, and imaging Raman hot spots" Proceedings Of The National Academy Of Sciences Of The United States Of America, 103, 13300-13303(2006).
12. D.P. Cherney, J.C. Conboy, J.M. Harris*, Optical-Trapping Raman Microscopy Detection of Single Unilamellar Lipid Vesicles. Analytical Chemistry 75, 6621-6628 (2003).
13. Kukura, P.; Yoon, S.; Mathies, R.A. Femtosecond stimulated Raman spectroscopy, *Analytical Chemistry*, **78** (17): 5952-5959 (2006).