Abstract Submitted
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**Excited state dynamics of single metal and semiconductor nanowires studied by transient absorption microscopy**[1] SHUN S. LO, Department of Chemistry and Biochemistry, University of Notre Dame, HONG Y. SHI, Notre Dame Radiation Laboratory, University of Notre Dame; Dept. of Physics, Harbin Institute of Technology, TODD A. MAJOR, NATTASAMON PETCHSANG, Department of Chemistry and Biochemistry, University of Notre Dame, LIBAI HUANG, Notre Dame Radiation Laboratory, University of Notre Dame, MASARU K. KUNO, GREGORY V. HARTLAND, Department of Chemistry and Biochemistry, University of Notre Dame — Transient absorption microscopy (TAM) is a relatively new technique that allows the study of single nanostructures with subpicosecond time resolution. Here, we present results for CdTe and Au Nanowires (NW). For the first material, we find an interesting power dependence of the excited dynamics, suggesting that a trap-filling mechanism is responsible for the observed behaviour. Additionally, acoustic phonons were observed, which were well described using continuum elastic models.[2] Carrier diffusion along these NWs are also reported. In the case of Au NWs, the propagation of surface plasmon polaritons was investigated. The results are in agreement with previous studies performed with fluorescence based techniques.[3,4] Unlike fluorescence techniques, multiple measurements on the same nanostructures are possible with TAM allowing one-to-one comparisons under different excitation polarizations and environments.

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[2]S. S. Lo et al. ACS Nano, **6**, 5274 (2012)
[3]B. Wild et al. ACS Nano, **6**, 472 (2012)
[4]A. Paul et al. ACS Nano, **6**, 8105 (2012)

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