

Abstract Submitted  
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**Optical Characterization of Natural Nontoxic Nanomaterials** DEVULAPALLI RAO, CHANDRA YELLESWARAPU, University of Massachusetts Boston — Synthetic nanomaterials – carbon nanotubes, semiconductor nanoparticles, nanowires and nanorods, metal clusters in polymer films – are extensively studied for potential photonic applications. Naturally occurring halloysite nanotubes offer additional advantages of high tensile strength, nontoxicity and biocompatibility. Halloysite is receiving lot of attention for application as low cost nanoscale container for encapsulation of biologically active molecules, drugs, and anticorrosion agents. We studied the optical properties of halloysite nanotube samples of length  $\sim 1000$  nm with 50 nm external diameter and 15 nm internal diameter. The hollysite sample was provided by Prof. Yuri Lvov, Institute for Micromanufacturing, Louisiana Tech. The sample suspended in water at a concentration 2.5 mg/ml exhibits a broad optical absorption band in the visible region with a peak  $\sim 600$  nm. Z-scan studies are carried out, with 3 nsec laser pulses of frequency doubled Nd:YAG laser, using 1 mm glass cell containing the sample suspended in acetone at a concentration 0.66 mg/ml. Open aperture z-scan measurements indicate two-photon absorption. Closed aperture z-scan measurements exhibit a positive nonlinear refractive index. Results of photoacoustic z-scan currently in progress will also be presented.

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