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Photothermal Therapy of Cancer Cells mediated by Blue Hydrogel Nanoparticles TAEYJUANA CURRY, Department of Physics, University of Michigan, Ann Arbor, MI, USA 48109, TAMIR EPSTEIN, H. Lee Moffitt Cancer Center & Research Institute, Tampa, FL, USA 33612, RAOUL KOPELMAN, Department of Chemistry, University of Michigan, Ann Arbor, MI, USA 48109 — Coomassie Blue dye has been covalently linked into a polyacrylamide nanoparticle matrix, so as to form nontoxic, biologically compatible, biodegradable and cell-specific targetable nanoparticles for photothermal therapy (PTT) of cancer. The nanoparticles were found to be approximately 80-95 nm in diameter, with an absorbance value of 0.52. Using an inexpensive, low intensity LED array light source (590nm, 25mW/cm2), with 20 minute excitation times, at 37°, PTT induced hyperthermia/thermolysis in HeLa cells, in vitro, resulting in virtually complete cell death when observed 3 hours after exposure. These multifunctional particles have been previously used in cancer delineation, for surgery, and in photoacoustic imaging studies; the addition of the PTT function now enables a multi-pronged medical approach to cancer.

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