Abstract Submitted
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Using gold nanorods and nanoshells in photothermal cancer therapy[1] TRAN NHUNG, VU DUONG, Institute of Physics, Vietnam Academy of Science and Technology, DUSTIN TRACY, Department of Physics, University of Florida, DAVID DROSDOFF, LILIA WOODS, Department of Physics, University of South Florida, HUONG NGUYEN, Department of Civil and Environmental Engineering, University of Illinois, DO NGA, N.A. VIET, Institute of Physics, Vietnam Academy of Science and Technology, ANH PHAN, Department of Physics, University of Illinois — The ability of strongly absorbing near-infrared radiation and efficiently scattering photon energy of gold nanoshells and nanorods has been investigated for cancer treatments. The nanostructures sizes are chosen to achieve a surface plasmon resonance localized peak in the "human-being skin windows" (650-900 nm), which is the best possible regime of operation for cancer treatment. After injecting nanoshell and nanorod solutions into chicken tissues, variations of temperature of samples as a function of time with and without near-infrared-light irradiation at 808 nm are reported. The temperature of chicken tissues injected with nanorods is found to be greater than that of the samples with nanoshells for the same absorbance of nanomaterials. The photothermal transduction efficiency of nanorods is also proved to be higher than that of nanoshells. Our theoretical calculations show excellent agreement with the experimental data.

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