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Biomcompatible gold nanorods conjugated with photosensitizers assisted for photostability and photodestructive ability WEN-SHUO KUO¹, SHEAN-JEN CHEN², National Cheng Kung University — Light-exposure-mediated higher temperatures that markedly accelerate the degradation of indocyanine green (ICG) in aqueous solutions by thermal decomposition have been a serious medical problem. In this work, we present the example of using gold nanorods (Au NRs) simultaneously serving as photodynamic and photothermal agents to destroy malignant cells. Au NRs were successfully conjugated with hydrophilic photosensitizer, indocyanine green (ICG), to achieve photodynamic therapy (PDT) and photothermal therapy (PTT). We also demonstrated that Au NRs conjugated with ICG displayed high chemical stability and acted as a promising diagnostic probe. Due to its stability even via higher temperatures mediated by laser irradiation, the combination of PDT and PTT proved to be efficiently killing cancer cells as compared to PDT or PTT treatment alone and enhanced the effectiveness of photodestruction and was demonstrated to enhance its photostability.

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