

Abstract Submitted  
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**Nanoparticle Self-Lighting Photodynamic Therapy For Cancer Treatment** WEI CHEN, University of Texas at Arlington — Photodynamic therapy has been designated as a “promising new modality in the treatment of cancer” since the early 1980s. Light must be delivered in order to activate photodynamic therapy. Most photosensitizers have strong absorption in the ultraviolet – blue range, therefore, UV -blue light is needed for their activation. Unfortunately, UV-blue light has minimal penetration into tissue and its application for *in vivo* activation is a problem. To solve the problem and to enhance the PDT treatment for deep cancers, we introduce a new PDT system in which the light is generated by afterglow nanoparticles with attached photosensitizers. When the nanoparticle-photosensitizer conjugates are targeted to tumor, the light from afterglow nanoparticles will activate the photosensitizers for photodynamic therapy. Therefore, no external light is required for treatment. More importantly, it can be used to treat deep tumor such as breast cancer because the light source is attached to the photosensitizers and are delivered to the tumor cells all together. This modality is referred as nanoparticle self-lighting photodynamic therapy.

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