

Abstract Submitted  
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**Nanoparticle Based Photodynamic Therapy for Cancer** WEI CHEN, Department of Physics, University of Texas at Arlington — This presentation describes research into a new approach to cancer treatment through a combination of radiation and photodynamic therapy. Under this concept, scintillation or persistent luminescence nanoparticles with attached photosensitizers, such as porphyrins, are used as an in vivo agent for photodynamic therapy. The nanoparticle PDT agents are delivered to the treatment site. Upon exposure to ionizing radiation such as X-rays, the nanoparticles emit scintillation or luminescence, which in turn activates the photosensitizers; as a consequence, singlet oxygen ( $^1\text{O}_2$ ) is produced. Studies have shown that  $^1\text{O}_2$  can be effective in killing cancer cells. The innovation described in this study involves the use of in vivo luminescent nanoparticles so that an external light source is not required to support PDT. Consequently, application of the therapy can be more localized and the potential of damage to healthy cells is reduced. This new modality will provide an efficient, low-cost approach to PDT while still offering the benefits of augmented radiation therapy at lower doses.

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