127b Chemiluminescent Calcium Phosphate Nanoshells

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Chemiluminescence, the emission of light as a result of a chemical reaction, has been used for decades to detect oxidative chemical processes, trace metals, and organic contaminants with high sensitivity. This great sensitivity also means that most of these substances are also highly susceptible to their environment and their reliable quantitative use requires carefully controlled reaction conditions. Nanoencapsulation of such substances may be a practical strategy for extending the utility of these reactions. Here we describe the synthesis, material properties and behavior of chemiluminescent calcium phosphate nanoshells loaded with luminol as the chemiluminescent agent. The performance of these nanoshells is compared to chemiluminescent solution studies, and potential applications of these new materials are described.