

PB118- PREPARATION AND OPTICAL PROPERTIES OF SILICA MATERIAL ENCAPSULATING TERBIUM COMPLEX

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Rare earth ions are generally used as fluorescent probes for analytical application because of their distinguished luminescence characteristics such as narrow spectral width, long luminescence lifetime and large Stokes shift. Luminescent functionalized silica particles have been widely used for bioanalytical assays. These particles are typically generated by incorporating complex into the silica matrix.

Silica-based material encapsulating luminescent terbium complex, [Tb(TMA)] (TMA = 1,3,5-benzenetricarboxylate), was prepared using microwave oven. Determination of amino groups in the material was performed using a method involving ninhydrin.

The emission lines for the complex and complex-silica under excitation at 300 nm (Fig. 1) were assigned to the transitions from $^5D_4 \rightarrow ^7F_J$ ($J = 6-0$) transitions at about 490, 544, 587, 622, 655, 672 and 684 nm, respectively. Both materials exhibited excellent characteristic green luminescence of Tb³⁺ ion.

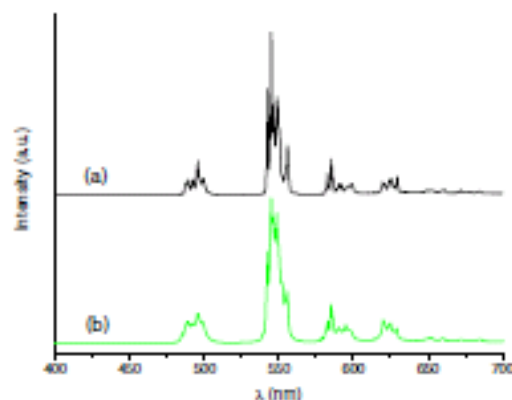


Fig. 1 – Emission spectra of a) complex and b) complex-silica under excitation at 300 nm.