

## **Phosphor Synthesis Techniques of the Last Century**

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This paper will present an overview of the primary methods used to synthesize phosphors, from solid state reaction to colloidchemical synthesis of nanocrystalline (1-10 nm) phosphors. Solid state and coprecipitation reactions remain the most widely used synthesis techniques for commercial fluorescent lighting and cathode-ray tube (CRT) phosphors. Phosphors used in high-resolution flat panel displays have more stringent requirements than traditional CRT phosphors. Specialized synthesis techniques were developed to precisely control particle size ( $<5 \mu\text{m}$ ), particle size distribution, and particle shape of display phosphors. Hydrothermal synthesis, combustion synthesis, and spray processing are a few of these techniques that will be described.

The development of colloidchemical synthesis techniques to produce nanocrystals has introduced the opportunity for a new class of optical devices.