

Preface

This book is divided into two volumes. In Volume 1, we start with an introduction to the basic properties of luminescent materials (phosphors) before addressing the principle of energy transfer and the pressure effect of phosphor. Moreover, we present the theoretical first-principles calculation of luminescent materials. After having established a basic understanding of phosphors, we then discuss a variety of phosphors of oxides, nitrides, (oxy)nitrides, fluorides, etc. In Volume 2, we shift focus to the applications of phosphors in light-emitting diodes, field-emission displays, agriculture, solar spectral convertors, and persistent luminescent materials. We then demonstrate through the basic upconversion of nanoparticles as well as their applications in biomedical contexts. Last, we introduce readers to the basics and applications of quantum dots.

Taken together, the two volumes offer essential insights on the basics and applications of phosphor at the bulk and nano scales.

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Dots and Their Applications

Volume 1

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