

39-16 Photoluminescence spectral change in layered titanate oxide intercalated with hydrated Eu^{3+}

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Layered oxides have a unique structure composed of a two-dimensional host with a guest cation. The layered structure gives rise to a variety of interesting properties. In general, the intercalation of a desired guest cation into the interlayer of a layered oxide is carried out by soft-solution processes, such as ion exchange reactions and electrostatic self-assembly deposition (ESD). The latter technique is superior as it allows simple and optimal intercalation of the guest cation. In our previous study, it was discovered that the interlayer water molecules in the titanate layered oxide intercalated with Eu^{3+} ions strongly promote the emission of Eu^{3+} based on energy transfer from the titanate nanosheet layer to the Eu^{3+} ions, in contrast to the generally accepted view that the presence of water suppresses the emission of Eu^{3+} ions. The present study examined in detail the photoluminescence properties of Eu^{3+} ions intercalated in the interlayer of titanate layered oxides during UV irradiation.

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