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**Spectroscopic Properties and Decay Characteristics
in Tb³⁺ Doped YAP Phosphors**

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The present investigation aims at elucidating the photoluminescence behavior of Tb³⁺ activated Yttrium Aluminate Perovskite (YAP) phosphors. The attention is especially focussed on the ⁵D₃ fluorescence and its energy transfer behavior. The decay curves of ⁵D₃ emission were measured in terms of Tb³⁺ content. Emission and excitation spectra as well as diffuse reflectance spectra were measured in the range spanning from vacuum ultra-violet (VUV) to visible light for a systematic spectroscopic analysis. The energy transfer between Tb³⁺ ions was also investigated by analyzing the decay curves of ⁵D₃ emission based not only on the multipolar interaction (dipole-dipole) but also on the exchange interaction. Rate equations including the contribution of 5d level was proposed, which incorporate two different types of non-linear terms into considerations. One is well known term designating the cross relaxation from ⁵D₃ to ⁷F₆ level, while the other square term represents the second type of cross relaxation from ⁵D₄ to ⁷D level.

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**La₂Ti_xO_y계 형광체의 결정구조와 형광특성
The luminescent properties and structure of La₂Ti_xO_y phosphor**

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일반적인 고상반응으로 Al³⁺과 Pr³⁺이 첨가된 La₂Ti_xO_y계 적색 형광체를 합성하고, XRD 분석을 이용하여 이들의 결정구조가 형광특성에 미치는 영향을 고찰 하였다. La/Ti의 비율에 따라 Orthorhombic과 Monoclinic의 상 변화가 발생하고 여기파장의 주피크가 단파장쪽으로 이동하는 것이 관찰된다

합성한 형광체의 최적조성과 발광 매커니즘을 PL을 이용하여 조사하였다. 특히 energy overlap spectrum과 농도퀀칭 데이터를 이용하여 La₂Ti_xO_y계 형광체에서 Al³⁺과 Pr³⁺이온 사이의 energy transfer과정을 연구하였다.