Defect-controlled New Electroceramics

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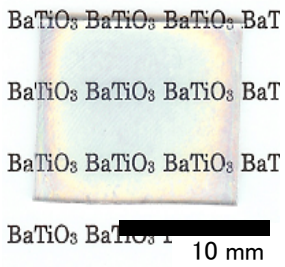
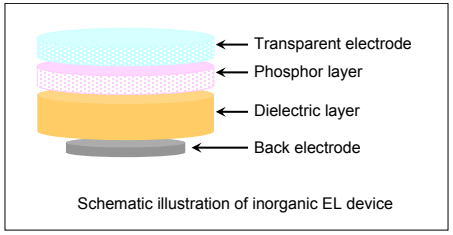
Seeds:

・Water soluble precursor for barium titanate ($BaTiO_3$)

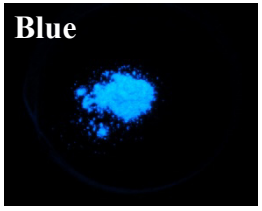


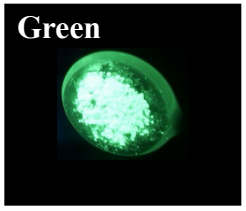
・Inorganic electroluminescent devices using metal oxides as light emitting layers

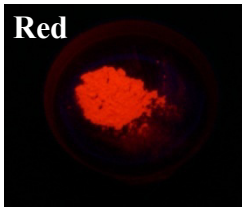


Schematic illustration of inorganic EL device

・New phosphors without using rare-earth elements







Contents:

The properties of materials are affected by the defects such as impurities and vacancies. They sometimes deteriorate the performance, whereas some kinds of defects play important roles on the functions of a material. Donors (or acceptors) and luminescent centers are the examples in semiconductors and phosphors, respectively. It is quite important to control the conditions of the defects in a material, which leads to improvement of the properties and the reliability.

Our research interests are concerned in electroceramics. The themes are connected to (1) to see and characterize the defects, and (2) to prepare new materials by controlling the defects.

Materials: Semicondcutive oxides (SnO_2, ZnO, TiO_2), capacitors ($BaTiO_3$), phosphors

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