

Ionic liquid assisted microwave synthesis route towards color-tunable luminescence of lanthanide- doped BiPO₄.

Autorzy

Joanna Cybińska

Chantal Lorbeer

Anja Verena Mudring

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Streszczenie

Ln³⁺-doped (Ln=Sm, Eu, Tb, Dy) nanoparticles of BiPO₄ with a particle size below 10nm were synthesized in a straightforward manner from the appropriate mixture of the respective metal acetates and the task-specific ionic liquids choline or butylammonium dihydrogen-phosphate by conversion in a laboratory microwave (120°C, 10min). The ionic liquid acts not only as a solvent and microwave susceptor, but also as the reaction partner and nanoparticle stabilizer. The materials were thoroughly characterized not only with respect to their optical properties but also by PXRD, FT-IR, TEM techniques. Depending on the lanthanide, the nanomaterial shows intense luminescence of different colors such as: orange (Sm³⁺), red (Eu³⁺), green (Tb³⁺) or even white (Dy³⁺).

Słowa kluczowe

ionic liquids, lanthanides, Nanomaterials, luminescence, optical materials, synthesis

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