

Fabrication of Y_6MoO_{12} molybdate ceramics : from synthesis of cubic nano-powder to sintering.

Autorzy

Piotr Sobota
Małgorzata Guzik
Vincent Garnier
Gilbert Fantozzi
Magdalena Sobota
Elżbieta Tomaszewicz
Yannick Guyot
Georges Boulon

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Streszczenie

The family of cubic yttrium molybdate (Y_6MoO_{12}) has been chosen due to the possibility of substituting Y^{3+} cations by luminescent trivalent rare earth (RE^{3+}) ones and to obtain transparent optical ceramics. The goal of the paper is to find a route towards the fabrication of dense Y_6MoO_{12} ceramics from nano-powders and using well-known ceramic sintering techniques such as Spark Plasma Sintering (SPS) and Hot Isostatic Pressing (HIP). We have investigated in detail process of the powder preparation by a combustion method as well as the sintering processes taking into account all important sintering parameters. Evaporation of MoO_3 was found to be correlated to reductive conditions or heating rate. Sintering was optimized in terms of phase composition, microstructure and porosity.

Słowa kluczowe

Cubic Y_6MoO_{12} molybdate, Combustion method, Optical ceramics, Spark plasma sintering (SPS), Hot isostatic pressing (HIP)

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