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Highlight of spark plasma sintering effect through the structural study and luminescence properties of $YNbO_3:Eu^{3+}$

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Recent developments in fast sintering processes makes possible to highly densify refractive materials. The application of these techniques in order to obtain transparent laser materials is promising and satisfying efficiencies have been recorded. Concerning the spark plasma sintering process, the main constraint is to control the grain growth so as to avoid anisotropy and diffusion in the ceramic, thus cubic matrices are preferred. The lattice of the Y_3NbO_7 phase is very interesting as it adopts a cubic symmetry being capable of incorporating a high proportion of rare earth doping elements, without charge compensation requirements. The oxygen vacancies are tolerated between 21-28% of niobium over cations (Nb/(Nb+Y)) ratio. We propose to expose the structural study and luminescence properties of Eu^{3+} doped Y_3NbO_7 sintered by SPS. Indeed, the fast and high crystallization rate of the phase results in a composite pellet in which two different compositions in the solid solution range are stabilized. This result shows an unexpected lack of miscibility in the phase diagram which reflects the fact that the final composition is driven by the SPS conditions and the ratio between niobium and yttrium elements.

Biography

Véronique Jubera is an Associate Professor-HDR, University of Bordeaux. She has over 70 publications in international journals. She is a specialist of luminescence of inorganic doped compounds. She has been working as an Associate Professor at the ICMCB-CNRS, University of Bordeaux since 14 years. Her research topic deals with the structure-luminescence properties of crystallized materials.

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