Morphological and structural characterization of microsized agglomerates of Nd^{3+}:$LiLa(WO_4)_2$ by the polymeric complexing method.

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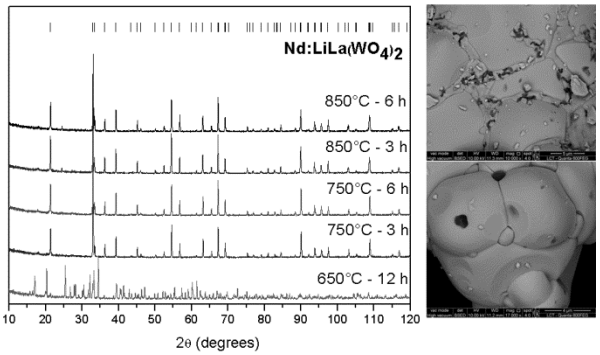
Random lasers are an attractive alternative to some applications which requires compact devices. In general, solid state random lasers use powder materials as scattering and gain media. Regarding traditional bulk laser hosts, powders are obtained in a lower cost and in a faster way. Rare earth (RE)-doped $LiLa(WO_4)_2$ (LLW) has been revealed as a promising optical material in the last decade [1-2]. It is characteristic of its tetragonal disordered crystallographic structure the broadening of absorption and emission bands what is suitable for tunable lasers. However, literature lacks information about preparation and characterization of this material in powder shape for laser applications. In this work, we have obtained by the polymeric complexing method and characterized microsized powders of Nd^{3+}:LLW with 1 mol% doping . It was found to be higher the influence by the temperature on the particle and crystallite size than the time of thermal treatment. The presence of a small amount of secondary phase is mostly in the particle´s boundaries. The agglomerates are very irregular in shape with an average diameter of 33 µm, formed by near-spherical particles of 500 nm to 10 µm.



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2. X. Huang, Q. Fang, Q. Yu, X. Lü, L. Zhang, Z. Lin, G. Wang (2008). *J. Alloys Com.* **468**, 321-326.