SYNTHESIS AND PROCESSING OF YTTRIUM DYSPROSIUM-DOPED SILICATE

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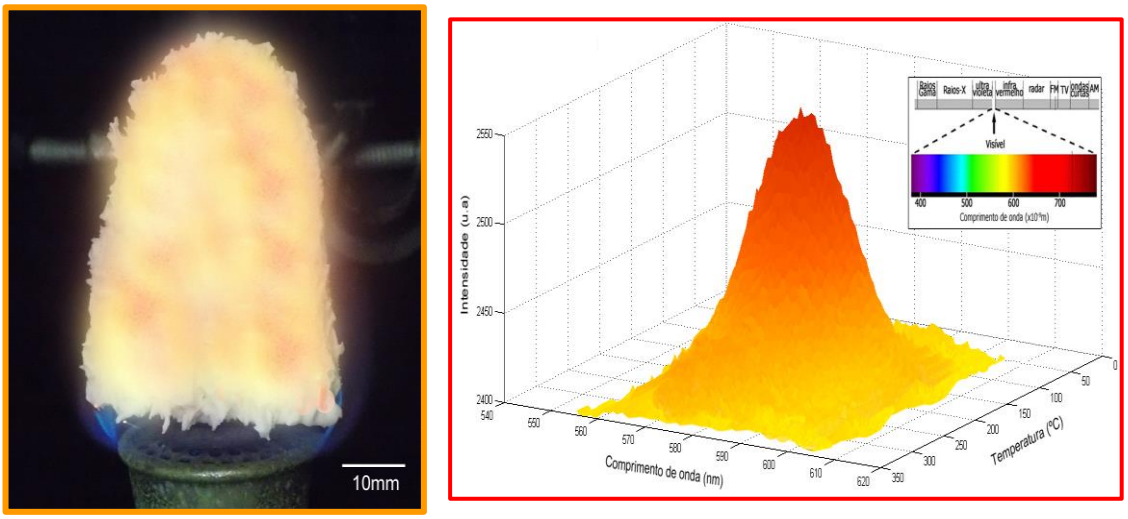
Sol gel route was used to synthetize Dy-doped Ytrium disilicate (Dy- $Y_2Si_2O_7$) powders. The well-defined composition was a concern of the precision of the synthesis process, which stoichiometrically controlled to attain single crystalline phase and obtain fine particles in order to use as raw material for prototyping of bioinspired matrix from Luffa Cylindrica (LCy). The surface of the LCy was carefully prepared by chemical attack and the rheological studies of the aqueous suspensions performed with the synthetized Dy-doped Ytrium disilicate was previously studied. The optimized conditions were used to obtain porous and homogeneous replicas. The pieces biomorphic structure shaped were sintered at 1500 °C / 7h. The prototype was tested as a device for illumination from the burning of biomass in flame and showed good yield. The disilicate emission thermoluminescence doped with dysprosium demonstrated enhance the lumen capacity of this device as illustrated in the follow figure1.

Figure 1. Luminescence stimulated by temperature for β-$Y_2Si_2O_7$:Dy^{3+}



References.

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