Abstract Submitted
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Properties of White Light generated by near infrared excitation of Yttrium silicates undoped and doped with Ytterbium[1] HATUN CINKAYA, Boston College, GONUL ERYUREK, GOKHAN BILIR, Istanbul Technical University, JOHN COLLINS, Wheaton College, BALDASSARE DI BARTOLO, Boston College — In the presented study, we have investigated the optical properties of two nanopowder samples, one of Y2Si2O7 (YSO) doped with 10% Yb3+ and one of undoped YSO. The samples were prepared by the sol gel method. The size of the nanoparticles of the samples was found to be ˜80 nm from Scherrer equation. 10% Yb3+ doped sample was illuminated with the 975 nm output of a diode laser with power ranging from 0.12 to 1.45 W under 0.01 mbar pressure. At low power, the spectrum showed a complex structure due to Yb3+ and other possible unwanted impurities. At high power, the spectrum loses its details and approaches the spectrum of white light. Under the same conditions the undoped sample showed only the white light when using the power of at least 1.45 W of the 975 nm diode. The effect of pressure on the white light emitted from the 10% Yb3+ doped sample and from the undoped sample were also investigated when the diode power was set at 3.38 W. The low pressure on the sample is a favorable condition for the emission of white light. The same behavior was manifested by the undoped sample.

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