

Abstract Submitted
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A New Source of White Light: Oxide Nano-powders Illuminated by a Laser Diode JOSEPH LIGUORI, Department of Physics, Boston College, GOKHAN BILIR¹, Department of Physics, Istanbul Technical University — A broad band white light emission was produced from un-doped metal oxide nanopowders under monochromatic infrared light excitation, specifically of wavelengths 803.5 nm and 975 nm. The spectrum was found to range between 450 and 900 nm in both cases, albeit with a slight change in the peak position of the spectra. Specifically, γ - Al_2O_3 and Y_2O_3 nanopowders were studied. This white light was spectroscopically characterized by collecting various emission spectra under various conditions such as different pumping powers of the exciting laser, and different atmospheric pressures surrounding the nanopowders. The decay and rise patterns and their relations to various parameters were also studied. Analysis of these measurements showed that there is a strong dependence of the light intensity on both the environment pressure and the pumping power of the exciting laser. Decay and rise patterns also displayed a strong dependence on the environment pressure and the pumping power. All properties of this white light were found to depend especially on the excitation wavelength.

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