

Abstract Submitted  
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**Light emission and luminescence enhancement in Erbium Oxide nanoparticles** LYNDA WILKINSON, MUHAMMAD MAQBOOL, Ball State University, IFTIKHAR AHMAD, Hazara University — We reports light emission from Erbium Oxide nanoparticles. The nanoparticles, with 45 nm diameter, were obtained in the form of nanopowder. These nanoparticles were characterized for light emission under a 30 mW, 532 nm Nd:YAG laser excitation and a Photoluminescence (PL) system, made by Princeton Instrumentation, with a Pixis brand CCD camera. The nanoparticles were stick on a scotch tape and placed in the PL system. Spectrum of the light emitted from the nanoparticles was obtained and analyzed after subtracting the background spectrum. Two emission peaks were observed around 554 nm and 820 nm. The green emission at 554 nm was obtained as a result of  $^2H_{11/2} \rightarrow ^4I_{15/2}$  transition, and the near infrared emission from  $^4I_{9/2} \rightarrow ^4I_{15/2}$  transition. The process was also repeated in vacuum and it was found that the green emission enhances tremendously, showing the importance of Erbium Oxide nanoparticles optical and biophotonics applications.

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