Abstract Submitted
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Color change of Ruby investigated by Raman and UV-vis SEAN BRECKLING, YING ZOU, SHISHIR RAY, LARRY BUROKER, SOMADITYA SEN, MARK WILLIAMSEN, PRASENJIT GUPTASARMA[1], University of Wisconsin-Milwaukee — The origin of a distinctive red color in Ruby (Al_2O_3:Cr^{3+}) continues to be a fundamental unsolved question [1]. We report the synthesis of a series of samples of 2% $Cr_2O_3$by solid state reaction [2] at temperatures varying between 900^o and 1300^oC. We observe a visible change in color at every stage, from light green, to grey, and to pink, indicating progressive incorportation of Cr^{3+} ions into the Al_2O_3 lattice. We report further investigations of x-ray diffraction analysis, Raman and UV-visible spectroscopy, and correlate the observed color changes with the evolution of vibration modes of the cage around CrO_6 and band-gap states resulting from Cr incorporation. We also plan to report results from single crystals grown using a floating zone. [1]J.M. Garcia-Lastra, M.T. Barriuso, J.A. Aramburu and M. Moreno, Phys. Rev. B 72(2005)113104 [2]L.W. Finger and R.M. Hazen, J. Appl. Phys. 49(1978)5823

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