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## Evidence of colour-modification induced charge and structural disorder in natural corundum: Spectroscopic studies of beryllium treated sapphires and rubies

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*IOP Conference Series: Materials Science and Engineering, Volume 2, Issue 1, pp. 012007, 4 pp. (2009).*

Corundum  $\alpha$  -  $\text{Al}_2\text{O}_3$  single crystals is an important gemstone known by different names depending on the colour it exhibits which in turn depends on the impurities that are present. The colour depends on the valence state of the impurity element present in corundum ( $\text{Cr}^{3+}$  in ruby,  $\text{Fe}^{3+}$  in yellow sapphire and Fe-Ti complex in blue sapphire). There have been a number of reports of diffusion controlled high temperature chemical reactions to influence the colouration in these materials. Present paper deals with the Raman and FT-IR results on Be treated rubies/sapphires and gives evidence of the disorder brought about by such treatments. This can be effectively used for diagnostic purposes for detecting the treated stones.

**DOI:** [10.1088/1757-899X/2/1/012007](https://doi.org/10.1088/1757-899X/2/1/012007)

