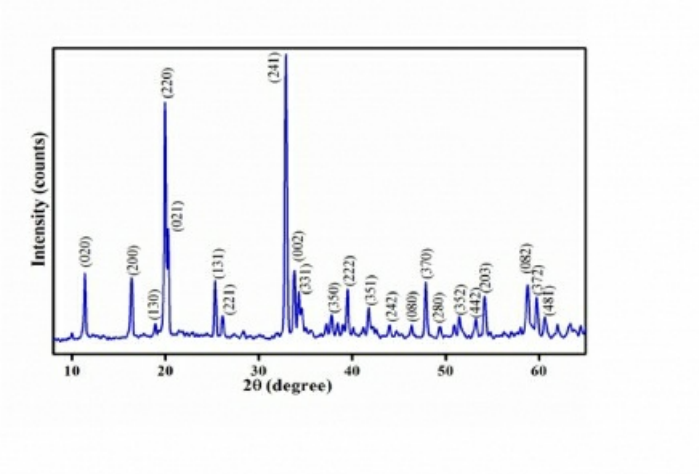
Novel Sb^{5+} containing oxide possessing unique structural features

Aanchal Sethi[1], Sitharaman Uma[1]
[1]*Department Of Chemistry, University Of Delhi, Delhi, India*
E-mail: aanchusethi22@gmail.com

Exploratory synthesis in spite of being a time consuming and tedious process, still remains as the best route for the identification of novel materials with interesting structures, properties and applications. Based on our success in the synthesis of new lithium based oxides [1-2], we continue to search for new phase formation in the quasi-ternary system Na2O-Fe2O3-Sb2O5 using powder and single crystal X-ray diffraction studies. Preliminary investigations (PXRD) reveal Na2FeSbO5 oxide crystallizing in orthorhombic symmetry with lattice dimensions (a = 10.87 Å; b = 15.66 Å; c = 5.32 Å) indicating a structural relation to the known brownmillerite structure [3]. However, the SXRD measurements correspond to a unique structure consisting of linked (FeO4) and (SbO6) octahedral units. Our systematic approach to solve the structure coupled with the results from other characterizations such as FTIR, Raman, DRS, magnetic measurements and ionic conductivity measurements will be presented.

1. Kumar V., et al. (2012) Inorg. Chem., 51, 10471-10473.
2. Gupta A., Uma S., (2015) J. Chem. Sci., 127(2), 225-233.
3. V.V. Politaev, V.B. Nalbandyan, (2009) Solid State Sciences, 11, 144-150



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