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## Structural and microwave dielectric properties of rare earth based (Nd, Sm, Yb) (Ti0.5Mo0.5) O4 ceramics with scheelite structure

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The (Nd, Sm, Yb) (Ti<sub>0.5</sub>Mo<sub>0.5</sub>) O<sub>4</sub> ceramic compounds were prepared via conventional solid state reaction method and observed to crystallize in the tetragonal scheelite structure with I4<sub>1</sub>/a space group. Structural analysis of these compounds was carried out using Rietveld refinement and studied the nature of bonding (bond length, bond valences of ions) with substitution of different rare earth (Nd, Sm and Yb) ions. Microwave dielectric properties such as dielectric constant ( $\varepsilon_r$ ), quality factor (Q×f) and temperature coefficient of resonant frequency ( $\tau_r$ ) were calculated using Agilent Vector network analyzer. The dielectric constant of these compositions was correlated with polarizability of compositions. The quality factor and f were explained with the structural characteristics. All these compositions observed to possess more than 93% theoretical density and have good microwave dielectric properties such as ( $\varepsilon_r$ = 8 –12, Q f = 27000 – 35000 GHz and  $\tau_f$ = -40 to -60 ppm/°C).

## **Biography**

V R K Murthy has completed his PhD from Indian Institute of Technology, Chennai, India. He is a Professor of Department of Physics at Indian Institute of Technology, Chennai, India. His current research interests focus on the areas of Microwave Communication. He has published more than 160 papers in the reputed journals.

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