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## Structure and Dielectric Behaviour of Barium Cupro Molybdate Ceramic

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**Abstract:** The ceramic of new perovskite Ba ($Cu_{1/2}$ $Mo_{1/2}$) $O_3$ has been synthesized at 1200 °C for 24 hours. The XRD analysis indicates an ordered hexagonal structure, which is attributed to large valency difference between octahedral cations. The IR spectrum reveals the presence of Cu-O-Mo ordered bond. The room temperature relaxation spectra imply a large conductivity term and multiple `Debye terms' at low frequencies. This is attributed to presence of the space charge. The variation of dielectric constant with temperature has been investigated from room temperature to 800 K. The diffusivity constant equal to 1 implies normal ferroelectric behaviour near room temperature. Near 650 K, the diffusivity constant is 2 implying diffuse phase transition at 650 K. The D.C. resistivity has been measured from room to 600 °C. The PTC of resistance of the ceramic at room temperature implies ferroelectric behaviour near room temperature. The band gap is around 1.42 eV and the corresponding Schottky barrier is determined from the I-V characteristic is less than 1 Volt. In conclusion, the ceramic is a diffuse phase material having possibly the presence of ferroelectric microdomains.

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