# البحث رقم (4)

*Published in:* **Materials Sciences and Applications: 2017, 8, 716-725**

**Authors: S. A. Arafat and S. S. Ibrahim**

**Impact Factor: 0.96**

**ISSN / EISSN: Online: 2153-1188, Print: 2153-117X**

## Study of the Structural and Electrical Properties of Cr-Doped $BiFeO_3$ Ceramic

## Abstract:

**Multiferroic BiFe1−xCrxO3 (x = 0.2 and 0.4) ceramics were synthesized in a single phase. The effects of Cr3+ substitution on the crystal structure, dielectric permittivity and leakage current were investigated. Preliminary X-ray structural studies revealed that the samples had a rhombohedral perovskite crystal structure. The dielectric constant ε ' significantly increased while the dielectric loss tanδ was substantially decreased with the increase in Cr3+ substitution. The temperature effect on the dielectric properties exhibited an anomaly corresponding to magneto-electric coupling in the samples and was shifted to lower temperatures with the increase in Cr3+ substitution. The leakage current density also reduced in magnitude with the increase in the Cr3+ substitution**