Abstract Submitted
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Synthesis and characterization of Fe doped HfO_2[1] RILIND ABAZI, AMIR OMIDWAR, PETER K. LEMAIRE, Central Conn State Univ, RAM S. KATIYAR, University of Puerto Rico, San Juan, PR, RAHUL SINGHAL, Central Conn State Univ — Hafnium oxide (HfO_2) materials were found to be useful for various applications such as in dielectric barriers, capacitors, oxygen detectors etc. We have synthesized $Hf_{1-x}Fe_xO_2$ ($0 \leq x \leq 0.05$) materials by precipitation method using hafnium tetrachloride ($HfCl_4$), iron chloride, and sodium hydroxide. The synthesis method was followed as reported earlier [1] with some modifications. The obtained precipitate of $Hf_{1-x}Fe_x(OH)_4$ was dried overnight at 80°C. The dried materials were ground with a pestle and mortar and the powders were finally calcined at 600°C for 3 hrs, resulting in $Hf_{1-x}Fe_xO_2$ nanoparticles. The synthesized nanoparticles were characterized using X-ray diffraction and micro-Raman spectroscopy. Thermal characterizations were carried out using DSC and TGA studies. The detailed results and analysis will be presented and discussed during the APS NE October 2017 meeting.

[1]A. Ramadoss, K. Krishnamoorthy, S.J. Kim *Mat. Lett.* **75** (2012) 215.

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