Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

UV-VIS regime band gap in a 3-d photonic system MING YIN, FOUZI ARAMMASH, Benedict College, Columbia, SC, TIMIR DATTA, University of South Carolina, RAY TSU, University of North Carolina-Charlotte — Synthetic opals are self-organized bulk, close packed systems that are three-dimensionally ordered with periodicity determined by the sphere diameter. These materials have been used as templates for nano devices with novel properties. For example, in carbon inverse opals show quantum hall effect and related magneto electric responses. Inverse are also reported to show photonic band gap. It is expected that devices based on these materials will be an alternative to electronic devices. These opal specimens were hexagonal or face centered cubic crystals with silica sphere diameter ranging between 220 nm and 270nm. Here we will present results of structural and imaging studies such as SEM, AFM and XRD. In addition results of the (UV-VIS) optical behavior will be provided. The optical response will be analyzed in terms of photonic band gaps in the sub-micrometer optical and UV regime.

Ming Yin
Benedict College, Columbia, SC

Date submitted: 26 Nov 2012 Electronic form version 1.4