Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Defect-induced multiphoton absorption and photoluminescence in BN for bio-imaging MEHMET KARAKAYA, YONGCHANG DONG, RAMAKRISHNA PODILA, APPARAO RAO, Clemson Univ — Emerging two-dimensional materials are known for their excellent optical properties. Boron nitride (BN) is the only 2D material which exhibits multi-photon absorption. This combined with tunable defect-induced photoluminescence in BN could be used for multi-photon bio-imaging. Previously, a two-photon absorption process was proposed for explaining non-linear optical absorption in BN. However, as discussed in this talk, we show that defects (such as C and O) in BN result in mid-gap states that enable three-photon absorption in addition to tunable emission. The non-linear optical properties of BN could be used for bio-imaging at longer wavelengths which facilitate higher penetration depth and the resolution in vivo.

Yongchang dong
Clemson Univ

Date submitted: 06 Nov 2015 Electronic form version 1.4