Abstract Submitted
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Quantum tunneling effects of 2-dimensional materials and their application for fast time response of deep UV detectors[1] PETER XIANPING FENG, Univ of Puerto Rico, ALI ALDALBAHI, Department of Chemistry, Collage of Science, King Saud University, Riyadh 11451, Saudi Arabia — We report on our approach to low substrate temperature, digital control, fast ($\sim$ 1 minute) synthesis of 2D single crystalline BNNSs. We focus our experiments on studies of various effects (temperature, tunneling, breakdown, polarization, subtract, thickness) on electrical and electronic properties, as well as on sensitivity, response and recovery times, repeatability, lifetime of BNNSs-based deep UV detectors. Raman scattering spectroscopy, X-ray diffraction (XRD), scanning electron microscope (SEM), Transmission electron microscopy (TEM) and electrometer were used to characterize the BNNSs. SEM and TEM measurements clearly indicate that each sample/membrane consists of a large amount of ultra-thin, high-quality BNNSs with distribution over entire surfaces of substrates (3x3 cm^2). Electrical characterization reveals the effects of temperature on the electrical **c**onductivity of transparent BNNSs highly depend on the directions of observations in the 2D case but vanished from the 3D bulk materials or thick films.

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