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Probing Edge defects in *n* (*n*=1,2..) Graphene Layer system via Raman Scattering[1] HUMBERTO GUTIERREZ, AWNISH GUPTA, PETER EKLUND, Pennsylvania State University — Results of a microRaman study (spot size ~0.7 microns; 514.5 nm excitation) of an edge (or boundary) of n- layer graphene films is presented. Graphene (n=1 layer) exhibits a very narrow Lorentzian D-band at ~1344 cm^{-1} with FWHM ~15 cm^{-1}. For $2<n<5$, this narrow peak is found to split into four bands. Interestingly, the D band intensity of the edge is quite strong (1/4 of the G-band) If te defects are truly localized on the edge, this implies a better resonance than found for defects at the interior, or, on the other hand, the range of the defects may extend a long distance into the interior of the films and involve many sites. Polarized Raman studies on this D band were made with the incident field at an angle θ with the respect to the average direction of the edge. The scattered light was collected either parallel (H) or perpendicular (V) to the edge. The polar intensity plots $I_V(\theta)$ and $I_H(\theta)$ were found to exhibit a quadrupolar and dipolar pattern, respectively.

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