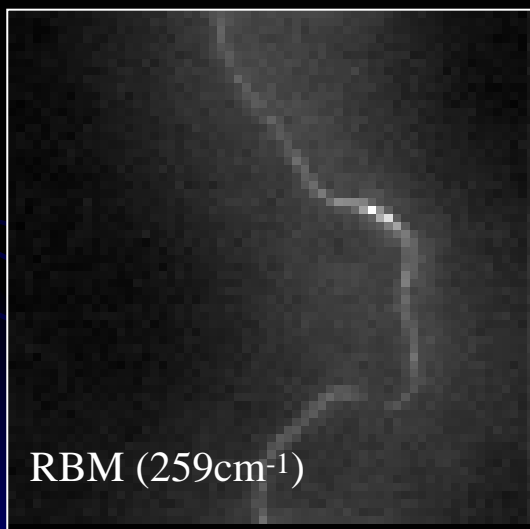


# IMAGING DEFECTS IN NANOTUBES WITH NEAR-FIELD RAMAN SCATTERING

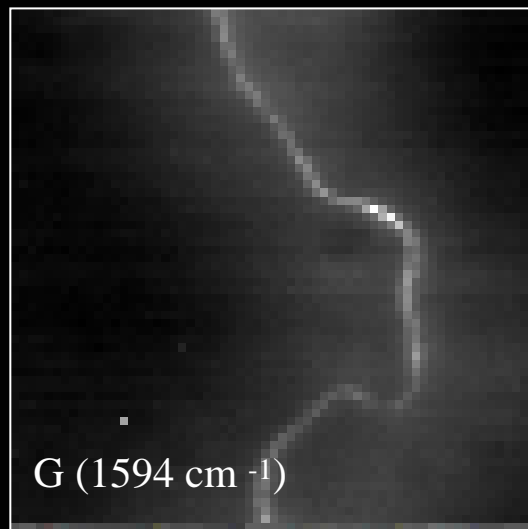


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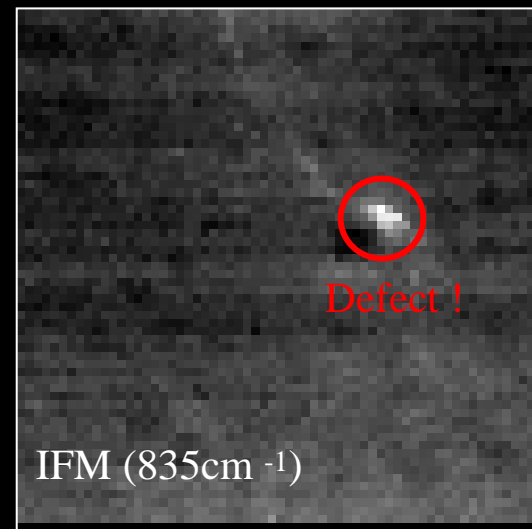
Example: Spatial map of different vibrational modes of a single-walled carbon nanotube (SWNT). The resolution in each image is 15nm. The localization of the IFM mode is indicative for a defect in the tube structure.



RBM ( $259\text{cm}^{-1}$ )



G ( $1594\text{ cm}^{-1}$ )



IFM ( $835\text{cm}^{-1}$ )

$(n,m) = (8,5) : d_t \sim 0.9\text{nm}$

Image size:  $1.0\text{ }\mu\text{m} \times 1.0\text{ }\mu\text{m}$