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G-band Phonon Symmetry Breaking of Graphene Monolayers
LAIN-JONG LI, YANG ZHAO, XIAOCHEN DONG, PENG CHEN, Nanyang Technological University — Aromatic molecules can effectively exfoliate graphite into graphene monolayers. And the resulting graphene monolayers sandwiched by the aromatic molecules exhibit pronounced Raman G-band splitting, similar to that observed in rolled-up graphene sheet (single-walled carbon nanotubes). Raman measurements and the theoretical calculation based on force-constant model demonstrate that aromatic molecules are able to induce G-band splitting via breaking the symmetry of two in-plane longitudinal and transverse optical phonons at Gamma-point.

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