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1996
2001 Walter Schottky 2003 3
Ge/Si GaAsN
Phys. Rev.
Lett., J. Am. Chem. Soc., Adv. Mater., Phys. Rev. B Appl.
Phys. Lett. SCI 3.0
SCI 50 9
Raman scattering of non-
planar graphite: arched edges, polyhedral crystals,
whiskers and cones 2002
2003
2005 2007
2008
Phys. Rev.
Lett./Phys. Rev. B, Appl. Phys. Lett./J. Appl. Phys.

Abstract: Single wall carbon nanotubes (SWNTs) are model systems for the investigation of fundamental physics in one-dimensional systems, and are also promising materials for applications in nanophotonics. Excitons dominate the optical response of SWNTs. The exciton binding energy is very large, from tens meV to 1 eV, depending on diameter, chirality, and dielectric screening. Thus, their photophysics is dictated by exciton states even at room temperature. I will review the recent studies on excitons in individual SWNTs, including the experimental evidence of excitons and the determination of their binding energy. I will then present in details excitons in nanotube bundles. The quantification of the degree of bundling in nanotube solutions is fundamental to optimize the material for basic research and applications. I will also discuss how to use the optical signatures of exciton energy transfer (EET) between SWNTs as a metrological tool to detect SWNT bundles.

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