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**Raman signal analysis of SWCNT grown inside AlPO4-5 template with ethylene carbon source** TING ZHANG, WU SHI, ZHE WANG, PING SHENG, Dept. of Phys. Hong Kong Univ. of Sci. & Tech. — We report on a new approach of growing carbon nanotubes inside the AFI zeolite template with ethylene as the carbon source, and the characterization of the resulting nanotube@AFI samples with Raman spectrum analysis and density functional theory simulations. Raman spectrum data of the ethylene-grown samples show many new features, and indicate that the new growth method enhances greatly the content of carbon nanotubes, with a much stronger RBM peak. Raman intensity can be simulated with density functional theory based method, for a direct comparison. These experimental and theoretical research methods, i.e. Raman spectrum, group theory analysis and density functional theory simulation, provide us with insight into the system, and help us to understand the novel superconducting behavior of the samples.

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