SELECTED EXAMPLES OF MOLECULAR CONFINEMENT USING NANOCARBON HOSTS

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In this contribution I will present some recent results on the dynamics of a selection of molecules confined inside different nanocarbon hosts: fullerene C_{60} and carbon nanotubes. The results are essentially derived from a large panel of neutron investigations at different time/energy scales.

Quantum confinement will be illustrated by the case of molecular H_2 confined inside C_{60}[1,2].

The effect of interstitial insertion of a cubic like molecule C_8H_8 (further referred as cubane) on the dynamic of the C_{60} lattice will be discussed in the light of textbooks results issued from inelastic neutron scattering investigations[3].

The mixed effects of confinement and low dimensionality will be illustrated by the case of peapods which are made from 1D C_{60} chains inserted inside single walled nanotubes[4].

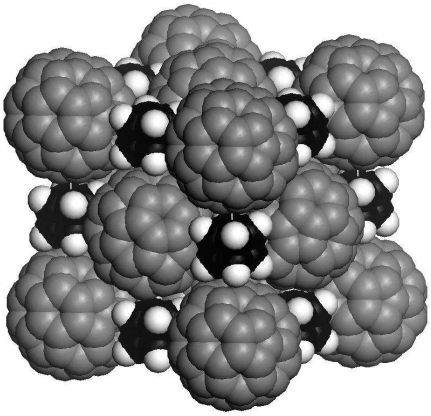

Fig.1 The fullerene-cubane “rotor stator” molecular system: at ambient conditions, the fullerene molecule is a rotor- rotating freely around its center- while the stator cubane acts as static bearings.

References

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