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Micro-Raman investigation of elastic properties of diphenylalanine nanotubes

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Elastic properties of the nanotubes of self-assembled aromatic dipeptide diphenylalanine are investigated by means of Raman spectroscopy and a mass-in-mass 1D model.

Analysis of nanotubes lattice vibrations reveals the remarkable contribution of the water in the nanochannel core of the tubes to the Young modulus and high water mobility along the channel. Direct measurements of Young modulus performed by the nanoindentation confirm the obtained results. Found effective elastic constants allowed to estimate for the first time the values of the sound speed in the nanotubes.

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Salle Réunion Chimie – I.C.P.M.

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