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Vibrational modes of viruses and virus-based nano-assemblies[1]
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— Viruses have been proposed as biological templates for fabricating identical nanostructures. Various metallic and semiconductor nanowires and nanotubes were fabricated using cylindrical viruses such as tobacco mosaic virus (TMV) and M13 bacteriophage. The knowledge of the phonon (vibrational) modes of the viruses used for nano-templating is important for monitoring the chemical assembly process and understanding carrier transport properties in resulting nanostructures. In this paper we present results of our investigation of the low-frequency phonon spectra of TMV and M13 viruses immersed in air and water [1]. It is demonstrated that the vibrational modes of inorganic nanowires and nanotubes undergo strong modifications when the organic virus is present inside the nanotube. [1] V.A. Fonoberov and A.A. Balandin, Phys. Stat. Solidi B **241**, R67 (2004); A.A. Balandin and V.A. Fonoberov, J. Biomed. Nanotechnol. **1**, in press (2005); see also at http://ndl.ee.ucr.edu

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