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Structural aspects of TiO_2 nanopowders SERGEY MAMEDOV, Horiba Scientific — TiO_2 nanopowders obtained using different methods with the mean size of 5, 15, 30 and 40 nm have been investigated by Raman spectroscopy in wide spectral range. Nano-size of TiO_2 crystals lead to a shift and broadening of the first-order Raman lines through a relaxation of the q = 0 selection rule and effects on to the position, width and asymmetry of a Raman bands. The details of the evolution of the 144 cm^{-1} Raman line shape on the size and distributions of the nanopowders are presented and discussed in frame of confined phonons model. Analysis of Raman spectra shows that structural characteristics of nanopowders may be different even size of the nanopowders is the same. Structural features of the material depend on preparation methods/conditions and can be extracted from Raman spectra of the material.

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