RAMAN SPECTROSCOPY INVESTIGATIONS OF TAGISH LAKE NANODIAMONDS.

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Introduction: Tagish Lake, a carbonaceous chondrite C2, fell on 18th January 2000 in Canada. According to [1], the meteorite contains about 3650–4330 (ppm) of nanodiamonds, while inferred from measurements of xenon [2] the abundance is 1800-2500 ppm. This is the highest nanodiamond abundance reported from chondrites. Raman spectroscopic signatures of separated nanodiamonds have been studied in the work presented here.

Samples and Experiments: Nanodiamonds were separated following established procedures [3] Raman spectra have been recorded using the confocal Raman micro-spectrometer T-64000 (Jobin-Yvon) with Argon line $\lambda=514.5$ nm.

Results: The spectra show a diamond peak at 1329 cm$^{-1}$ (FWHM of about 50 cm$^{-1}$) and a broad peak around 1600 cm$^{-1}$ (Fig.1) [4]. Previous investigations of Allende meteorite presolar nanodiamonds showed peaks at 1326 cm$^{-1}$ and 1590 cm$^{-1}$ [5] what is in agreement of laboratory manufactured nanodiamonds Raman investigations [6].

Shifts of diamond peak positions (monocrystalline cubic diamond has Raman peak at 1332 cm$^{-1}$) occur because of the nanometer crystal sizes [6] or because of different polytypes [7] of diamond occurring in the sample.