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Magnetism and Raman Spectroscopy on Tissint (olivine-phyric shergottite)

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The fall of Tissint was observed in July 2011 in S-Marocco, about 20kg of the Martian meteorite have been found in the meantime [1,2]. Tissint was classified as a typical olivine-phyric shergottite [1], first magnetic data have been presented by [3,4]. The magnetic behaviour shows significant differences in comparison to the other (olivine-phyric) shergottites and is characterized by remarkable variations between and within the samples which we have investigated so far. Dominating magnetic phase is nearly stoichiometric magnetite in quite small particle sizes; additionally we have found Tichromite, minor pyrrhotite and ilmenite. Micro Raman spectroscopy (MRS), SEM/EDX and EMPA results confirmed the presence of the silicates pyroxene (pigeonite), olivine and plagioclase (maskelynite) as well as of the opaque (magnetic) phases. A shock degree of 40-45 GPa was determined by MRS evaluating the maskelynite peaks.

[1] Irving A., et al., 2012, 43rd LPSC, #2510.

[2] Chennaoui Aoudjehane H., et al., 2012, #6254.

[3] Hoffmann V. et al., 2012. ACM Niigata, #6344.

+ [4] Hoffmann V. et al., 2012. 75th Metsoc Conf., #5227.

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