



## Origin of the soluble species in the Tissint Mars meteorite

Elizabeth Oberlin (1), Samuel Kounaves (1,3), Mark Claire (2), Gian Gabriel-Ori (4), and Kamal Taj-Edine (4)

(1) Tufts University, Department of Chemistry, Medford, USA (samuel.kounaves@tufts.edu), (3) Imperial College London, UK, (2) St. Andrews University, UK, (4) Ibn-Battuta Centre for Planetary Exploration, Marrakech, Morocco

The Tissint martian meteorite is a high magnesium olivine shergottite that was observed falling on 18 July 2011 near the Oued Drâa valley, Morocco [1]. Fragments collected over the next several months in the remote desert region should thus represent minimally contaminated fragments of martian surface and crustal material. We obtained interior fragments of Tissint from the Natural History Museum in London, and analyzed the soluble species using ion chromatography. Analyses showed trace levels of perchlorate ( $\text{ClO}_4^-$ ) as well as several other species including nitrate ( $\text{NO}_3^-$ ), chlorate ( $\text{ClO}_3^-$ ), and sulfate ( $\text{SO}_4^{2-}$ ). In order to differentiate the measured species in Tissint from possible terrestrial contamination, we collected soil samples from the Tissint strewn field, centered at approximately 50km ESE of Tata, and 48 km SSW of Tissint, near El Ga'ïdat plateau and both N and S of Oued El Gsaïb valley. Samples were collected from the surface and at depth from over 15 sites spanning the strewn field. The samples were then brought back to our laboratory and analyzed for a variety of soluble inorganic species. We also compare these values to those recently reported for the Mars meteorite EETA79001 [2], which shares similar lithology, elemental abundance, and cosmic ray exposure age, to the Tissint meteorite.

[1] Chennaoui Aoudjehane, H., et al., (2012) *Science* 338, 785-788

[2] Kounaves, S.P., et al., (2014) *Icarus*, 229, 206-213