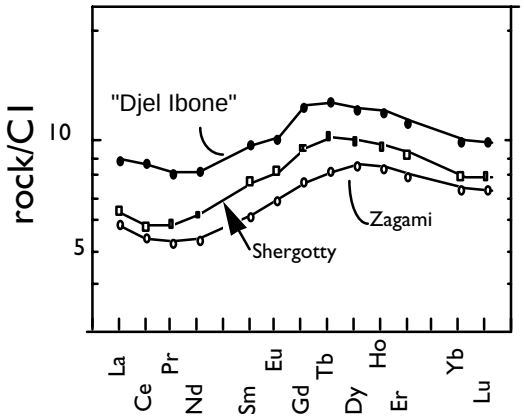
ONE MORE SHERGOTTITE FROM NORTH WESTERN SAHARA. A. Jambon[1], J-A. Barrat[2], P. Gillet[3], C. Göpel[4], M. Javoy[5], J-L. Joron[6], V. Sautter[7]. [1] Laboratoire MAGIE UMR 7057 Université P. et M. Curie 4 place Jussieu 75252 Paris (jambon@ccr.jussieu.fr), [2] CNRS UMR6112 and Université d'Angers, France. [3] Laboratoire des Sciences de la Terre, Ecole Normale supérieure de Lyon, France. [4] Laboratoire de Géochimie et Cosmochimie, Institut de Physique du Globe, Paris, France. [5] Laboratoire de Géochimie des Isotopes Stables, Institut de Physique du Globe Paris, France. [6] Laboratoire Pierre Süe, CEA-CNRS, Saclay, France. [7] Laboratoire de Minéralogie, Muséum National d'Histoire Naturelle, Paris, France.

Introduction: We report on the discovery of a new shergottite from Morocco. This single stone weighing 320 g is not officially named yet. The location of its find is unknown but we used "Djel Ibone" as a working name. It is a fine-grained basaltic rock consisting mainly of pyroxenes (about 70 vol%, pigeonite $En_{48}Wo_{13}$ Fs_{39}, augite En36 Wo_{32} Fs_{32}) and plagioclase converted to maskelynite (about 23 vol%, Ab_{41-47} Or_2 An_{57-51}). Accessory minerals include merrilite, apatite, pyrrhotite, chromite, Fe-Ti oxides, silica (stishovite), and baddeleyite. Melt pockets were recognized with stishovite occuring as both phenocrysts and submicrometric needles. The specimen is highly fractured at all scales: pyroxene cores are cut by large and medium sized fractures whereas their rims are affected by numerous small fractures. A circular fracture often delineates the Mg rich core. Maskelynite is only affected by a few major fractures. Terrestrial calcite is present mainly as veins cross-cutting the meteorite, as in many other Saharan finds.

Chemistry: The bulk composition of "Djel Ibone" has been determined using a combination of three analytical techniques: ICP-AES for major elements, ICP-MS for trace elements and INAA for additional trace elements. About 50 elements were determined with an accuracy better than 5 % in most cases. The bulk composition of "Djel Ibone" is for selected elements : TiO_2 0.81 wt%, Al_2O_3 6.83 wt%, FeO* 17.8 wt%, MnO 0.49 wt%, MgO 9.51 wt%, CaO 10.2 wt%, Na_2O 1.28 wt%, K_2O 0.13 wt%, Ni 77 ppm, La 2.16 ppm, Sm 3.88 ppm, Eu 1.5 ppm, Gd 0.58 ppm, Yb 1.64 ppm, Th 0.4 ppm. The REE pattern is similar to that of Shergotty or Zagami. "Djel Ibone" is only marginaly weathered as illustrated by the U, Ba and Sr abundances which are sensitive indicators of surface processes [1]: It displays a normal Th/U ratio and its Ba and Sr abundances are not outside the trend defined by other unweathered shergottites. Therefore, key element ratios such as FeO*/MnO (≈ 30), Na/Al (≈ 0.40), K/La (= 500) or Ga/Al (= 4.1 10^{-4}) indicate that "Djel Ibone" is a new member of the martian meteorite clan[2].



Oxygen isotopes: "Djel Ibone" has a $\delta^{18}O$ of +5.03 ‰ and a $\delta^{17}O$ of +3.09 ‰. The corresponding $\Delta^{17}O$ (=+0.47 ‰) is a little high but in agreement with the martian origin of this meteorite[3].

References:

[1] BarratJ-A. et al. (2001) *Meteorit. Planet. Sci. 35, 95-106*. [2] Meyer C. (1998) *Mars Meteorite.Compendium 1998*, *Nasa, Houston.* [3] Clayton and Mayeda. (1996) *Geochim. Cosmochim. Acta, 60, 1999-2017*.