

OUARKZIZ IMPACT STRUCTURE, ALGERIA: PRELIMINARY PETROGRAPHIC AND GEOCHEMICAL STUDIES. R. Sahoui^{1,2} and D. Belhai¹, ¹University of Sciences and Technology Houari boumediene, Algiers, Algeria (r.sahoui@gmail.com), ²University Mouloud Mammeri, Tizi ouzou, Algeria.

Introduction: Ouarkziz impact structure is situated in southwestern Algeria, exactly 170 km north of Tindouf (7°33'W and 29° 00' N) [1, 2, 3]. It is formed of two discontinuous rings of hills. The outer ring is set in the Lower Namurian Limestones and in the marls with gypsum at the Southwestern part, where it is severely eroded. This ring shows strongly fractured upturned limestone beds with some blocks of ejected limestones [4]. The inner ring is characterized by a distinct series of hills that appear as piles of rocks intensely brecciated. This ring disappears at the south quadrant of the crater [4]. The central area is largely covered by alluvium. The Lower limestones that out crop at the south part of the area dip vertically. Breccia accumulation at the south quadrant of the crater is noted [4].

Petrographic and geochemical studies: We have studied the petrographical characteristics and geochemical composition of 35 samples from the Ouarkziz site. Petrographic studies on thin sections of the samples from the outer ring showed the appearance of calcite mechanical twins on the veins. Twin analysis by Groshong's calcite strain-gauge technique is used to test the impact hypothesis at Ouarkziz structure, to estimate the amount of erosion and twinning strains associated with the hercynian orogeny in the Tindouf basin. In the Southwestern part, we noted an important hydrothermal activity. Here, the breccias are generally on the form of dikes outcrops. XRF analysis of the rocks forming the outer ring show weak amount of silica (2.8%) The inner ring is composed of angular to subangular fragments of various dimensions ranging from centimeters to several meters in size. XRF analyses showed that these carbonates rocks contain an important amount of silica (6.6%); however, quartz grains are not well developed. The breccias occurring on the central area show significant amounts of silica (3.1% to 15.3%). Siliceous rocks (containing 97% of silica) are noted and planar features (PFs) are observed in some of the quartz grains. XRF analyses of these rocks showed important amounts of Sr (500 ppm), Co (55 ppm), Zr (294 ppm), Ba (9875 ppm) and Ce (366 ppm). The silica origin in the Ouarkziz structure is discussed in this work, as the Hamada (a neogene mixture of carbonates and siliceous rocks covering the Paleozoic formations of Tindouf basin) outcrops 500m North-east of the crater rim.

References: [1] Fabre J. et al. 1970. *Comptes Rendus Academie Science Paris, série D* 270, 1212-1215. [2] Belhai D. et al. 2006. *Bulletin du Service Géologique de l'Algérie. Vol. 17, n2, p. 95-112.* [3] Sahoui R. 2013. Abstract #1184. 44th Lunar & Planetary Science Conference. [4] Sahoui R. 2014. Abstract #5105. 77th Annual Meteoritical Society Meeting.