

Report on the National Field based Workshop FBW-2011 – N.K. Chauhan (Department of Geology, M. L. Sukhadia University, Udaipur-313 002; Email: nkcgeol54@yahoo.com)

The Geology Department of Mohanlal Sukhadia University, Udaipur, Rajasthan organised a National Field Based Workshop on, “Litho-tectonic controls of Mineralization”, FBW-2011 during September 17-19, 2011 as a sequel of the Golden Jubilee Celebration of the University. Faculty members of the Department of Geology, MLS University, Udaipur, officers from the

Directorate of Mines and Geology, participants from various universities and government organizations, research scholars and P.G. students of geology department actively participated. In all about 45 geoscientists from different parts of India participated.

The workshop was inaugurated in the morning of 17th September, 2011. Prof.

N.K. Chauhan Convener, FBW-2011, welcomed the gathering and Dr. A.K. Vaish, Additional Director, Directorate of Mines and Geology, Govt. of Rajasthan was the chief guest. Dr. Vaish pointed out the importance of field and structural studies for prospecting and exploration of mineral deposit. Prof. A.B. Roy, Presidency University, Kolkata was the Guest of



Group photo of participants at Department of Geology, Udaipur

Honour and Prof. Vinod Agrawal Head of the Department preside the inaugural session.

The workshop started with the introductory talks, first by Prof. A.B. Roy on the "Process of mineralization particularly the metallic and non-metallic deposits". It was mainly focused on the tectonic activities responsible for the deformation of the pre-Aravallis, Aravallis and Delhi Supergroup of rocks. These rocks are the main host for metals such as Pd, Zn, Cu, Ag, Fe and non-metallic minerals like asbestos, calcite, talc, barite, emerald etc. The tectonic and structure have played an important role in the formation, distribution and localization of these mineral deposits.

The second talk was by Prof. N.K. Chauhan on "Structure and tectonic controls of mineralization". He underlined the importance of classical field and structural studies at different scales and their application in exploration and discovery of new deposits. He has also introduced the participants to the geology and structures

present in the Aravalli Supergroup, specially the structures responsible for the controls of mineralization. The talk was followed by afternoon field session in which the field works at Tulsi-devji-ki-sarai, east of Udaipur, where basement complex and the Lower Aravalli sequence including the litho-tectonic controls of pyrophyllite formation. Different structures, both primary and secondary, in different lithologies like quartzite, phyllite, meta-volcanics, carbonate rocks etc. were shown to the participants and measurement of attitude on structures were taken at the Debari Formation in polymictic conglomerates.

Next day a visit to multimetallic deposit at Tiranga Hill, village Pur, Dist. Bhilwara was organised. Here the strata-bound Pb-Zn or Cu sulphide ore bodies are hosted by metamorphosed banded iron formation. The ore body has a length of 1200 m, striking in NE-SW direction and attains maximum concentration in the fold hinges. The major anomalies coincide specially with cores of synformal folds in Banded Magnetite

Quartzite (BMQ) bands, suggesting structural control of the richer parts of the mineralization. Some places a low grade strata bound Cu, Pb and Zn sulphide mineralization with ferruginous lithologies are present. The rock types belong to early to middle Proterozoic Aravalli Supergroup, lying over reworked basement of the Archaean banded gneissic complex.

In the evening field work along Great Boundary Fault (GBF) an important dislocation zone in the south-eastern Rajasthan, striking NE-SW as a tectonic lineament was done. The GBFZ in Berach River is controlled by characteristically open to gentle and upright F_2 folds that plunges low angle towards NE and/or SW.

On the third day, exercises on identification and measurement of structures in phyllite, garnet mica-schist and meta-ultramafic rocks were done. Cover basement relationship at Kabita, occurrence of white mica quarry, meta volcanic, dolomite, phyllite etc. were seen. Study on superposed deformation and interference pattern was done at Gogunda and Bagdunda area. Finally, the application of mesoscopic structures in delineation of the Talc mineralization in talc-chlorite schist was seen on mesoscopic to map scale, which form the part of upper Aravalli formations (along Kaliguman lineament).

The valedictory session focused on the discussion on critical aspects of the structure and tectonic controls of mineralization. It was felt that such type of National Field Based Workshops are to be organized once in a year to discuss the current standings and it is important to bring together the geologists from different organizations and to encourage the study of mineralization and the role of structure and tectonics.