

High Resolution Cathodoluminescence Spectroscopy of Carbonate Cementation in Khurmala Formation (Paleocene- L. Eocene) from Iraqi Kurdistan Region, Northern Iraq

Muhammed Omer

Salahaddin University-Erbil, Iraq

A combination of high resolution cathodoluminescence-spectroscopy (HRS-CL) with spatial electron microprobe analysis and optical microscopy is used to determine paragenesis and history of cementation in the limestones and dolostones of Khurmala-Formation which is exposed in many parts of northern Iraq. The studied formation was subjected into different diagenetic processes such as micritization, compaction, dissolution, neomorphism, pyritization and cementation that occurred during marine to shallow burial stages and culminated during intermediate to deep burial late stages. Five dolomite-rock textures are recognized and classified according to crystal size distribution and crystal-boundary shape. Dolomitization is closely associated with the development of secondary porosity that pre-and postdates dissolution and corrosion; meanwhile such porosity was not noticed in the associated limestone's. Microprobe analysis revealed three types of cement, calcite, dolomite and ankerite which range in their luminescence from dull to bright. Cathodoluminescence study indicated four main texture generations. These are (1) unzoned microdolomite of planar and subhedral shape, with syntaxial rim cement of echinoderm that show dull to red luminescence, (2) equant calcite cements filling interparticle pores which shows dull luminescence and weak zonal growth, (3.1) homogenous intrinsic blue stoichiometric calcite with dull luminescence and without activators, (3.2) coarse blocky calcite cement with strong oscillatory zoning and bright orange luminescence which postdates other calcite cements, (4) ankerite cement with red to orange, non- luminescence growth zonation which is the last formed cement.

Biography:

Muhammed Fakhri Omer is an Assistant Professor at the Salahaddin University, Iraq since 2017. He did his M.Sc. in 2000 and Ph.D. in 2012 from Baghdad University, Iraq. He worked as a Lecturer at the department of geology, Salahaddin University in Erbil, Iraq in 2004. He did his Postdoctoral scholarships for one year at Warsaw University –Poland 2016. He participated in many local and international conferences with oral presentations and workshop activities. He published many papers in the Journal of African Earth Science in 2014 and 2015 and a paper in the Arabian Journal of Geosciences in 2016. He is awarded with Certificate of Reviewing on August 2016 from Journal of African Earth Sciences (ELSEVIER).