Type of presentation: Poster

MS-13-P-3238 Three dimensional morphometric characterization of rock pore-throats in sedimentary oil and gas reservoirs by scanning electron microscopy

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It has been established that both, pore-throat size distribution and morphological characterization along with diagenetic fabrics of rocks can be relevant indicators of reservoir flow capacity, storage capacity and potential for horizontal drilling(1,2); Carbonated crystalline rocks may lead to pores network systems ranging from abundant to poor pore systems. These may exhibit polyhedral, tetrahedral, sheet, piping-like or a combination of them. Past investigations have led to the development of techniques to characterize pores properties with techniques such as capillary pressure, pore cast and, lately, SEM dual-beam techniques to digitally reconstruct a 3d pore system object from serial sectioning using ion milling techniques. In this paper we present recent results, developed at IMP, of a novel technique to measure both, pore throats and porosity of carbonated rock specimens, based on systematic studies of pore casting and electron microscopy. Tridimensional determination of shapes, networking pattern and size distribution of pores systems in these rocks are also discussed.

Refererences

1. Chidsey, T. C (2002) “Heterogeneous Shallow-Shelf Carbonate Buildups in the Paradox Basin, Utah and Colorado: Targets for Increased Oil Production and Reserves Using Horizontal Drilling Techniques.” Semi-annual Technical Progress Report. April, 2002-October 5, 2002. Utah Geological Survey.

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Acknowledgement: The authors wish to thank the Mexican Petroleum Institute (IMP) for allowing us to use its facilities to perfrom this resarch.

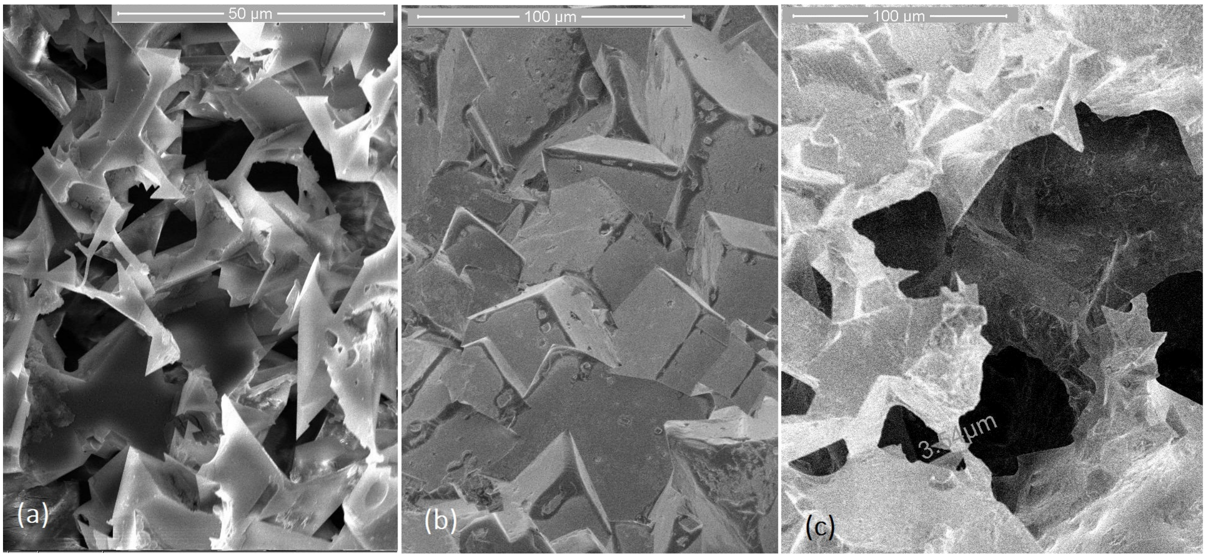

Fig. 1: Fig. 1 Examples of carbonated pore systems a) tetrahedral, b) polyhedral-sheet like and c) polyhedral.