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Información suplementaria

Microstructural characterization of pore types in unconventional gas reservoirs utilizing FEG-SEM: An example from the Galembo Member of the Cretaceous La Luna Formation, Middle Magdalena Valley Basin (Colombia)

Caracterización microestructural de tipos de poros en reservorios no convencionales de gas utilizando MEB-FEC: Un ejemplo del Miembro Galembo de la Formación La Luna del Cretáceo, Cuenca del Valle Medio del Magdalena (Colombia)

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Contenido

Figure 1S. Main mineral list used for mineral maps and quantification.

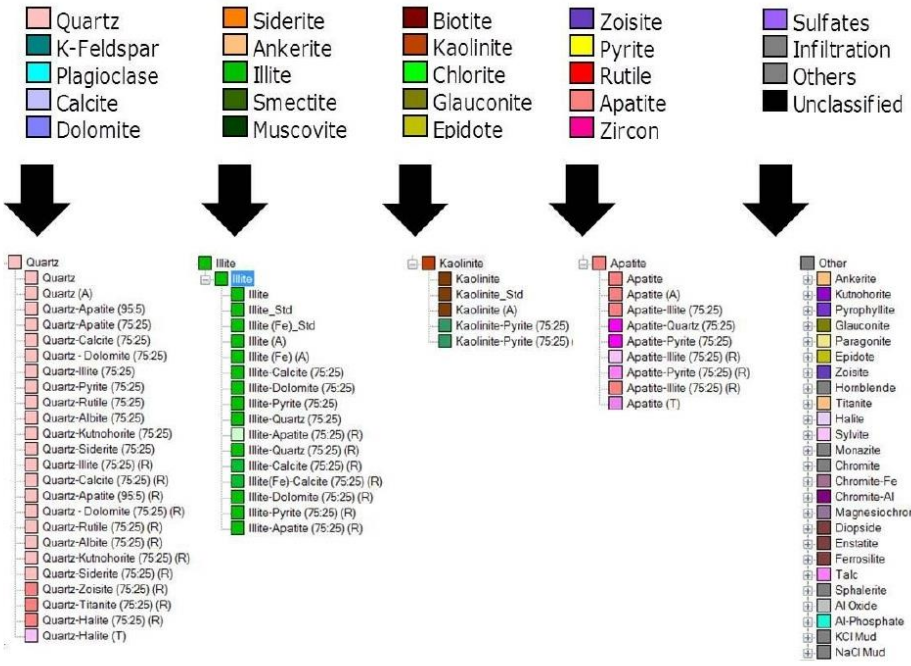


Figure 2S. Left, generalized stratigraphic column of the Cretaceous sequence at the MMVB (modified after **Reyes *et al.***, 2000; **Barrero *et al.***, 2007). Right, generalized stratigraphic column of the Upper Coniacian and probably Santonian Galembo Member of the La Luna Formation after **Casadiego** (2014).

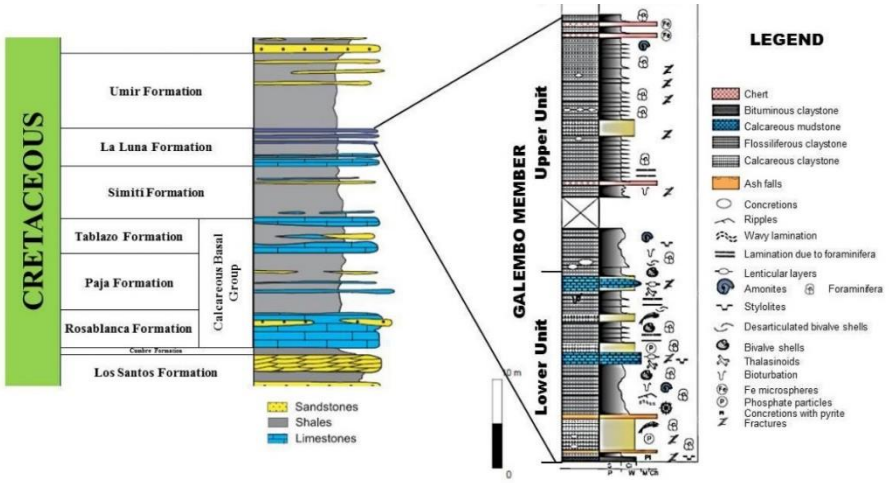


Figure 3S. Photographs at outcrop scale of the occurrence of sedimentary rocks of the Galembo Member. (a) Well-laminated organic-rich claystone with carbonate concretions. (b) Carbonate concretions in organic-rich claystones; several broken concretions reveal the presence of rare fish bones and teeth (c) and common ammonites (d). (e) A typical outcrop of phosphoric rock.

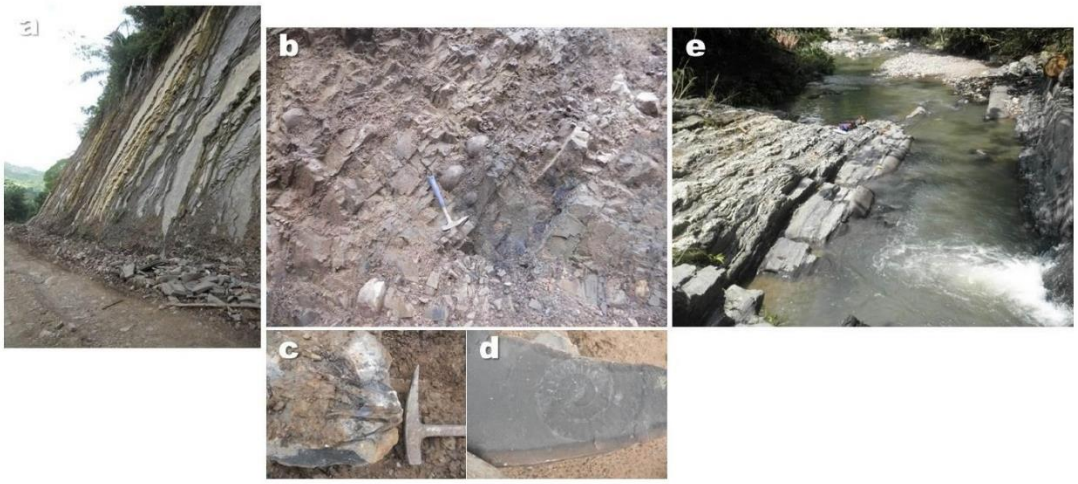


Figure 4S. Microstructural and textural features of the Galembo Member mudstones, highligthing their sample heterogeneity and how black organic matter layers are aligned to give the rock a strong anisotropy.

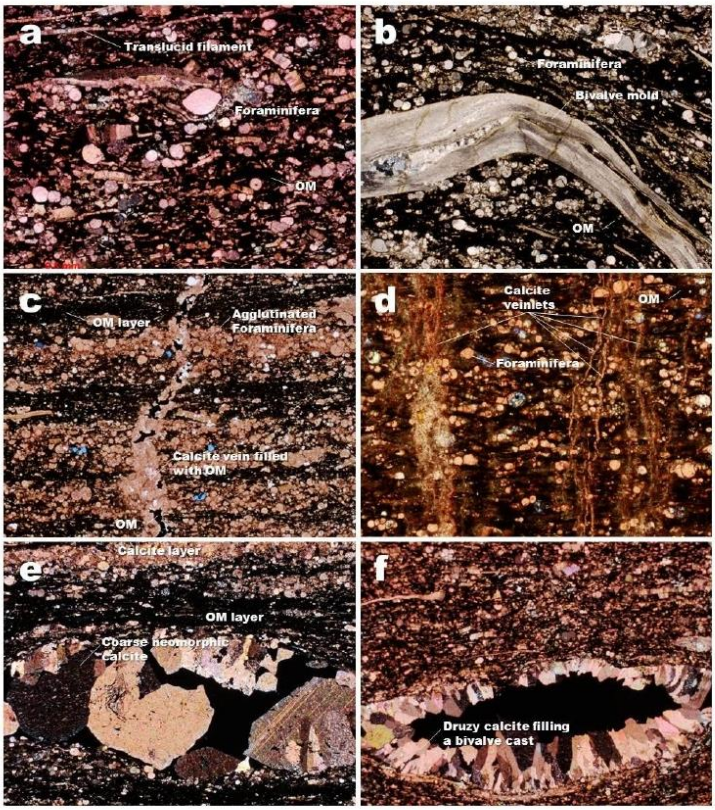


Figure 5S. Microstructural and textural features of a typical mudstone of the Galembo Member, which contains numerous planktonic foraminifera.

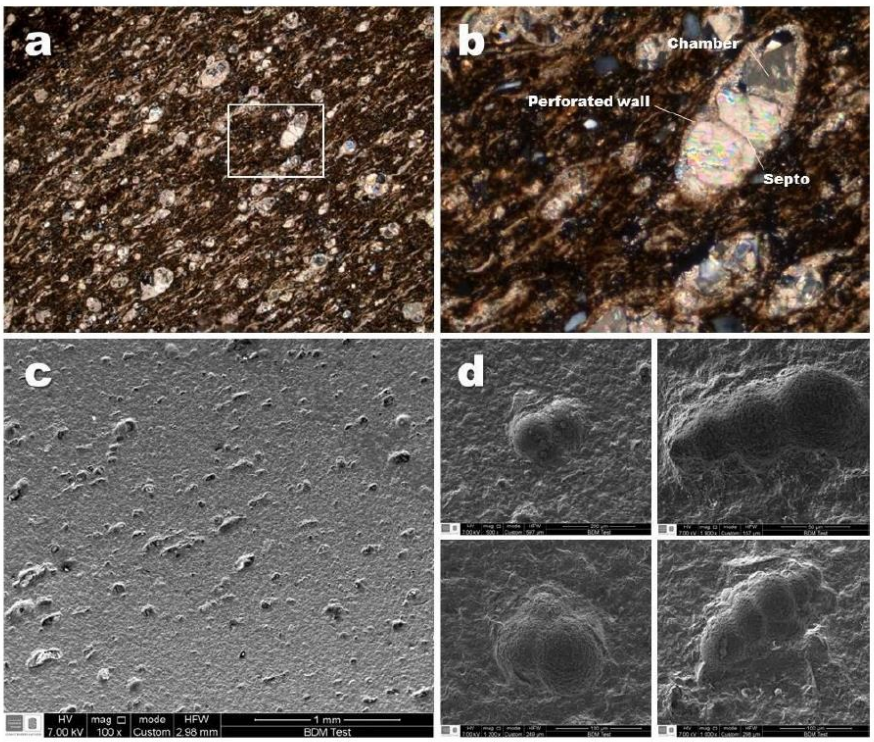


Figure 6S. Left, QEMSCAN mineral map (0.7 µm pixel spacing) of the selected area in Figure 2b. Right, legend indicating the recognized mineral phases. Below, the calculated modal abundances in wt%.

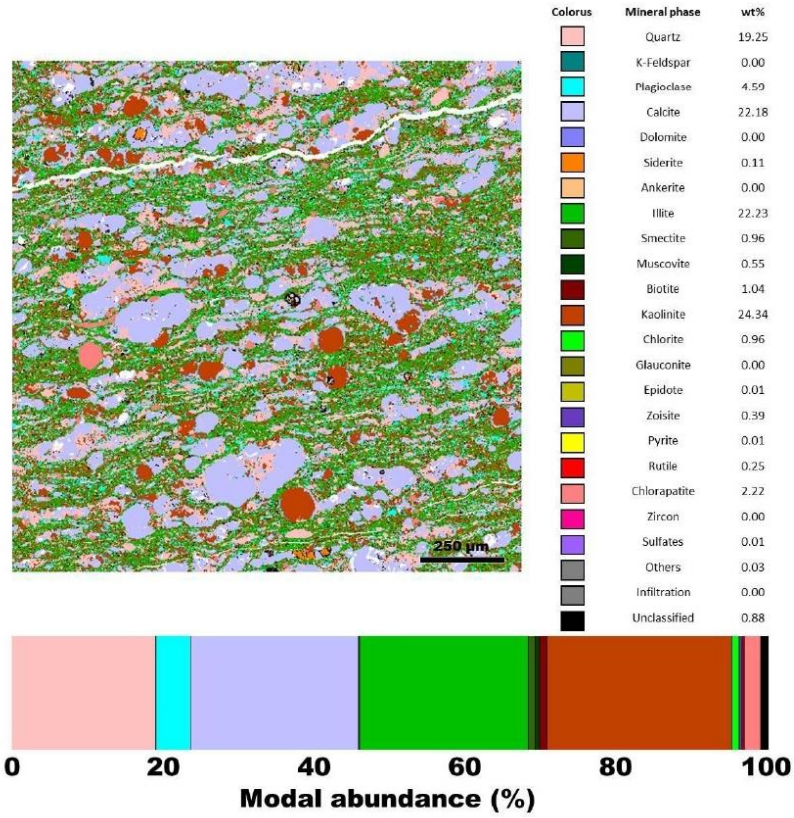


Figure 7S. Porosity in ion milled surfaces of the Galembo Member mudstones.

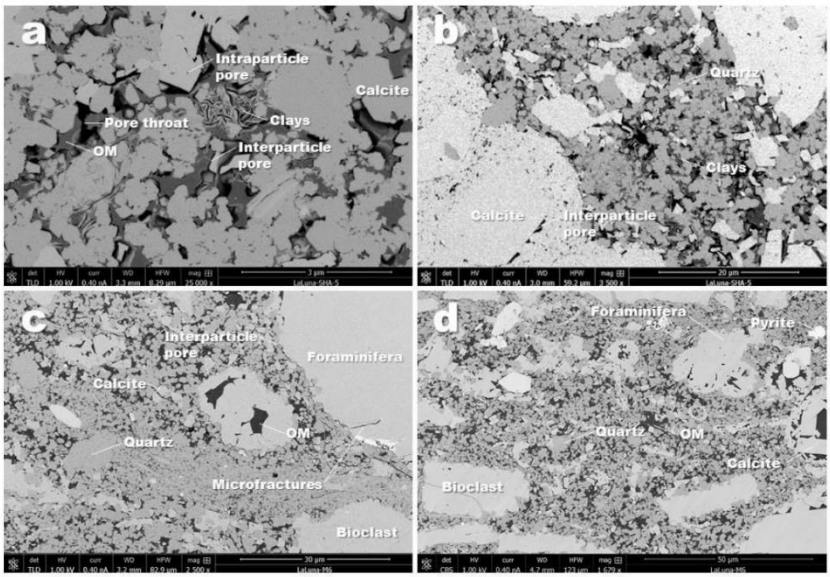
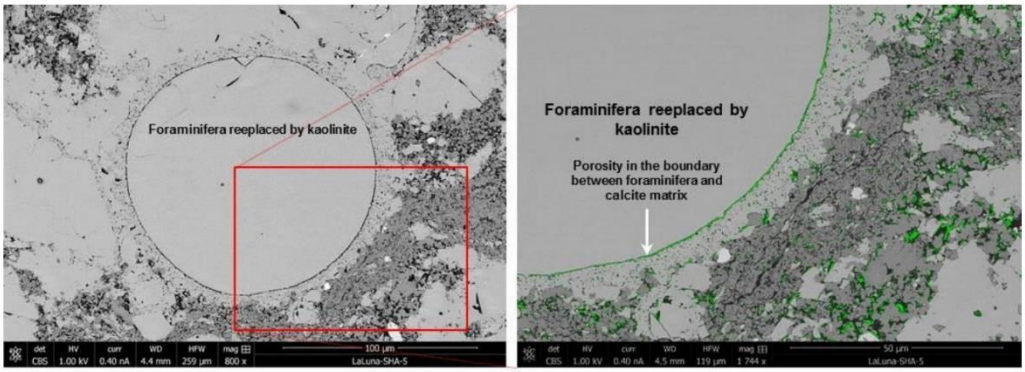


Figure 8S. Organoporosity in nonlaminated to slight laminated foraminifera wackestones of the Galembo Member.



Porosity associated to organic matter

Figure 9S. Relationship between HI (mg HC/g TOC) vs. OI (mg CO_2/g TOC) of the Galembo Member mudstones (adapted and modified after **Van Krevelan**, 1950).

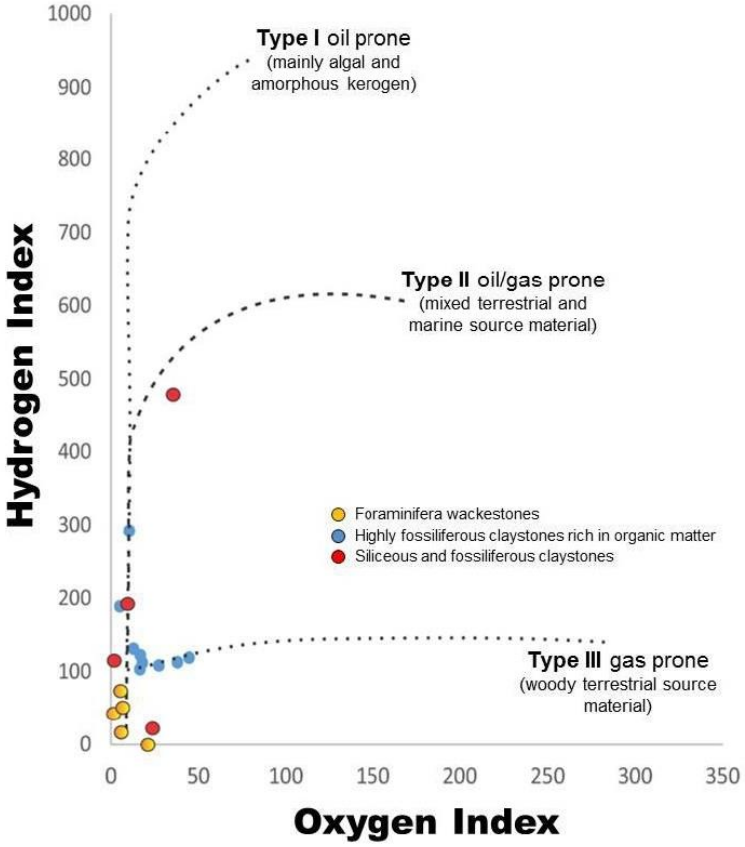


Figure 10S. Conceptual model summarizing the post depositional evolution of the Galembo Member mudstones (adapted and modified from **Delle Piane *et al.***, 2015).