



## **Characterization of Lithofacies in an oil well via experimental measurement of bulk magnetic properties and their inference through Neuro Fuzzy Logic analysis**

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We have measured NRM, room temperature magnetic susceptibility, S ratios and Königsberger ratios in 134 samples that encompass approximately 670 meters of depth in an oil well drilled in eastern Colombia. These samples are sandstones and siltstones from the Guayabo, León and Carbonera Formations (Oligocene/Miocene/Pliocene). Our main goal is to assess the potential of the Neuro Fuzzy Logic analysis to infer magnetic parameters such as S ratios and Königsberger ratios from magnetic susceptibility experimental data. This method has been previously used with some success to obtain other petrophysical properties such as permeability out of porosity experimental data, however this is the first time it is applied to bulk magnetic properties. The results obtained here are then compared and integrated with their experimental counterparts. They are also used to study the variability of the paleoenvironmental conditions during the formation of the Barinas Apure sedimentary basin in eastern Colombia and western Venezuela.