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Micro- and macro-scale petrophysical characterization of potential reservoir units from the Northern Israel

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Lower Cretaceous sandstone serves as hydrocarbon reservoir in some places over the world, and potentially in Hatira formation in the Golan Heights, northern Israel. The purpose of the current research is to characterize the petrophysical properties of these sandstone units. The study is carried out by two alternative methods: using conventional macroscopic lab measurements, and using CT-scanning, image processing and subsequent fluid mechanics simulations at a microscale, followed by upscaling to the conventional macroscopic rock parameters (porosity and permeability). Comparison between the upscaled and measured in the lab properties will be conducted. The best way to upscale the microscopic rock characteristics will be analyzed based the models suggested in the literature. Proper characterization of the potential reservoir will provide necessary analytical parameters for the future experimenting and modeling of the macroscopic fluid flow behavior in the Lower Cretaceous sandstone.