



Porosity and permeability study of sedimentary rocks

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Porosity makes important part of rocks fabric. It controls not only permeability but numerous other physical properties. Correct determination of porosity (volume, size and shape of porous) is fundamental for correct interpretation of permeability data. The knowledge of porosity and permeability has practical consequences in many practical fields – oil and gas reservoirs study, hydrology, and conservation study of rocks used on monuments.

The experimental study of porosity, and gas and water permeability determination has been conducted on series of porous sedimentary rocks (sandstones, marlstones) with porosity ranging from 5-50 %. The porosity was studied by direct methods (microscopic observation of pores in thin sections impregnated by mixture of fluorescent dye and epoxy resin, quantification of pore geometrical parameters by image analysis) and indirect methods (high pressure mercury porosimetry). There has been found close correlation between porosity (size and interconnectivity of pores) and gas permeability. The water permeability of studied rocks is influenced not only by porosity itself but also by nature of matrix in clastic sedimentary rocks that can modify to flow through pores.