# Hydraulic radius and mole surface of the fluid in the rocks of the Earth's crust

V. M. Vitovtova[1], V. M. Shmonov[1], A. V. Zharikov[2]
[1]Institute of Experimental Mineralogy, RAS, Chernogolovka
[2]IGEM RAS

Structural characteristics of rocks define dynamics of movement of transcrust fluids, and also a contribution of surface energy to thermodynamic properties of fluids in nanopores. In the conditions of interaction crust solution – rock substantially is defined by properties of an interface of phases. We by a filtration of argon experimentally determined absolute permeability, $k^o$ ($m^2$), and hydraulic radiuses of a pore of rocks of $Rh = V\varphi/A\varphi$, where $V\varphi$ – volume of a time, $A\varphi$ – a surface of a pore are calculated. Trends of hydraulic radius of a pore of rocks in a continental crust for temperature gradients 9, 15 and 26°C /km are constructed. According to these data effective radiuses of a pore and a specific surface of rocks are calculated at high temperatures and pressure. It is important that value $\Delta G_f$ a fluid doesn't depend on granularity of rocks and is defined only by the size of microcracks. Appreciable effect (4 kJ/mol) at interaction quartz – water at temperatures 300–600°C and pressure 50 and the 100th MPa it is possible to expect in microcracks in the size of 70–20 nanometers and less.

*Key words: surface, surface energy, nanopores*

**Citation:** Vitovtova, V. M., V. M. Shmonov[1], A. V. Zharikov (2012), Hydraulic radius and mole surface of the fluid in the rocks of the Earth's crust, *Vestn. Otd. nauk Zemle, 4*, NZ9001, doi:10.2205/2012NZ_ASEMPG.