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

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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, \( k^0 (m^2) \), and hydraulic radiuses of a pore of rocks of \( R_h = V_{\phi}/A_{\phi} \), where \( V_{\phi} \) – volume of a time, \( A_{\phi} \) – 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

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