**Abstract**

We performed non-equilibrium molecular dynamics (NEMD) simulations of two systems consisting of two silicon slabs and slab of water with different initial configurations: bulk water and meniscus. Heat fluxes through systems depending on the depth of the potential well 𝜀 in the Lennard Jones potential for O-Si interactions were calculated using two radically different approaches. The dependence of the Kapitza resistance on $ε$ was obtained. Density and temperature profiles in range 𝜀=10-21 meV were constructed. The trend according to which increasing 𝜀 leads to larger and more directed heat fluxes is clearly represented using data obtained by MD and FEM.