A modelling the dynamics of in-situ leaching process at the microscale

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Abstract: Some physical and chemical processes take place at interfaces between the solid and the liquid. One of them is in-situ leaching, an effective and promising method of extraction of valuable components from ores by their selective dissolution. To explore the main features of the movement of fluids media and dissolution mechanism of rocks by acids, it is considered a mathematical models at the microscopic level [1], using equations of continuum mechanics [2] and well-known chemical laws. The important point here is a derivation of new conditions at the free boundary and the dynamics of this boundary.

The efficient and accurate numerical simulation at the microscale plays an important role in understanding of the basic physical properties of rocks leaching processes. The application of complex numerical algorithms on a huge grids leads to the high demands on computer resources. Therefore, the numerical simulation of exact mathematical models is based on parallel computing.

Keywords: solid-liquid interface, microscopic dynamics, parallel computing

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