Mathematical modeling of filtering process of two-phase suspensions in tubular filters under nonisothermal conditions

Akhmadiev F., Farakhov M., Bekbulatov I., Isyanov C.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016, Pleiades Publishing, Ltd.The hydrodynamic conditions in tubular filter cells operating under nonisothermal conditions are studied. The equations of mechanics of heterogeneous media are used to describe the separation process of two-phase suspensions, which are written and simplified in the cylindrical coordinate system taking into account characteristics of the flow. The challenge is solved semi-analytically. Using the methods of surfaces of equal consumptions and Slezkin, numerical calculations on the constructed mathematical model are presented for particular implementations of the separation process.

Keywords

equations of mechanics of heterogeneous media, filtering, mathematical modeling, nonisothermal flows, suspensions