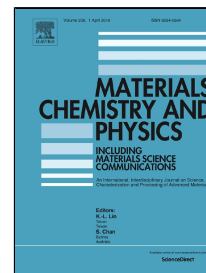


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SIZE EFFECTS IN PHYSICOCHEMICAL PROCESSES IN NANOPARTICLES AND NANOPORES

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Highlights

Size effects in nanoparticles and confined ionic liquids are considered.

Lower cohesive energy in nanoparticles increases rate of chemical reaction.

Laplace pressure in nanoparticles decreases rate of chemical reaction.

Confined ionic liquids in nanopores affect gas mixture separation.

Keywords:

Size effects;

Nanoparticles;

Nanopores;

Diffusion.

Abstract

Mass transfer and chemical reactions in nanoscale particles under the assumption of the size dependence of the cohesive energy or the influence of the Laplace pressure are considered. A comparison of the above-mentioned approaches is given. It is shown that the use of the first or second of the above-mentioned approaches can lead to a difference in the dependence of the rates of the aforementioned processes on the nanoparticle size. The influence of the confinement of ionic liquids within nanopores of supported ionic liquid membranes on the separation of gas mixtures is discussed. Considered regularities can be

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