

The application of the scaled particle theory for an investigation of a fluid of hard spherocylindrical rods in a random porous media

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In this report we present generalization of scaled particle theory for the description of hard convex body fluid in random porous media. As a result, analytical expressions for the chemical potential and the equation of state of hard convex body fluid in hard convex body and overlapping hard convex body matrices are obtained.

The influence of non-spherical shapes of fluid molecules and matrix particles on thermodynamic properties is discussed. The theory is applied for the investigation of a fluid of hard spherocylindrical rods in a hard convex body and an overlapping hard convex body matrices. One and two scaling parameters theory is developed for the description of these systems. The possibility of nematic ordering and the influence of porous media on isotropic-nematic phase transition are discussed.