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Compressibility and compactivity of bi-dispersive many-particle conglomerations (liquid and granular mixtures)

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We propose to use the apparatus of Kirkwood-Buff theory [1] in combination with Carnahan-Starling model [2] and Mansoori [3] equations of state together with the relevant phenomenological information, which obtained from the direct observations, to describe compressibility and compactivity of bi-dispersive many-particle conglomerations (liquid [4] and granular mixtures [5]). By use of above mentioned approach we found the possibility to describe substantiate empirical data in the full range of values of the volume (or molar) fraction. A good coincidence between theoretical and relevant experimental data has been outlined.

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[2]. Carnahan N.F., Starling K.E. Equation of state for nonattracting rigid spheres. I. J. Chem. Phys. 51(2), 635-636. (1969) https://doi.org/10.1063/1.1672048

[3]. Mansoori G.A., Carnahan N.F., Starling K.E., Leland jr. T.W. Equilibrium Thermodynamic Properties of the Mixture of Hard Spheres. J. Chem. Phys. 54(4), 1523-1525 (1971) https://doi.org/10.1063/1.1675048

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Primary authors: Prof. GERASYMOV, Oleg (Odesa State Environmental University); Mr SPIVAK, Andrii (Odesa State Environmental University); SIDLETSKA, Liudmyla (Odesa State Environmental University)

Presenter: Mr SPIVAK, Andrii (Odesa State Environmental University)

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