Condensed Matter Physics, 2011, Vol. 14, No 3, 30102: 1–6

http://www.icmp.lviv.ua/journal

Foreword

My biography

I was born in Lviv on July 20, 1951 to the family of geologists. My father, Volodymyr Kalyuzhnyi, was a prominent scientist working in the field of mineralogy and geochemistry. For his life-long, outstanding professional activity in fluid inclusion research in 1993 he was awarded by the H.C. Sorby medal, introduced by the international fluid inclusion community. To a substantial degree the personality of my father had influenced my choice to become a scientist. After graduating from Ivan Franko Lviv State University in 1973, where I was studing physics, I started my scientific career in the Institute of Geology and Geochemistry in Lviv. The major task there was to provide a thermodynamical background for the theories of the gas and oil formation, which were being researched at the Institute. During the years, spent at the Institute, I became quite an expert in thermodynamics of the mineral oil and mastered the methods of computer programming, which appear to be very useful in my future work on the statistical mechanics of fluids. Another useful, albeit quite different experience received by me during these years is related to my participation in geological expeditions, which were undertaken each year by the Institute. During these expeditions I visited a number of different places in Ukraine and in the former Soviet Union, which include Sakhalin and Kuriles islands, Pamir mountains and Solovky islands in the White Sea. My work on thermodynamical properties of the mineral oil urged me to get a more profound understanding of the chemistry and physics of the liquid state of matter and in 1980 I became a PhD student of Prof. M. Holovko in the department “Theory of Solutions” of the Institute for Theoretical Physics. My PhD project was to extend site-site approach in the theory of the molecular fluids to the ion-molecular systems and to apply it to the description of electrolyte solutions. In 1987, my thesis work “Site-site approach in the theory of the ion-molecular systems” was successfully completed and I received my PhD degree. After PhD thesis defence I joined the group of Prof. Holovko on the permanent basis. Shortly thereafter Prof. Holovko brought to my attention a series of the papers on the multidensity theory of associating fluids, published by M. Wertheim during 1984-86. I was impressed by the elegancy and flexibility of the theory developed by Wertheim. These papers initiate a series of the studies carried out by me and by my coworkers in the field of strongly interacting systems. Further extension and modification of the multidensity integral equation theory allowed me and my coworkers to set up a basis for systematic investigation of ionic association in electrolyte solutions and to address the challenging task of describing strongly associating 2-2 electrolyte solutions and highly asymmetric electrolyte solutions. In particular, multidensity version of the mean spherical approximation (MSA) (the so-called associative MSA (AMSA)) was developed and used for the purpose of accurate prediction of the liquid-gas phase diagram of the restricted primitive model of electrolyte solution represented by the fluid of charged hard spheres of equal size. Later on the version of the theory referred to as the product-reactant Ornstein-Zernike approach (PROZA) was developed and applied to the description of the properties of dimerizing, polymerizing and network forming fluids and macromolecular fluids. These studies had been summarized and in 2000 I successfully defended Dr. Sci. thesis “Equilibrium statistical theory of the complex and associating liquids in the site-site approach”. During the last decade I together with my coworkers have published a series of papers in which the problem of describing the phase behaviour of polydisperse fluids was addressed going beyond simple van der Waals level of description. Recently we elaborated a thermodynamic perturbation theory for associating fluid with central force associating potential. The theory was used to get a quantitatively accurate prediction for the liquid-gas phase diagram of the hard-sphere dipolar fluid.

Yurij Kalyuzhnyi

Main publications

1. Holovko M.F., Kalyuzhnyi Y.V., Screened potentials of the site-site ion-molecular model. The mean spherical approximation, Mol. Phys., 1989, **68**, No. 2, 375–396.
2. Holovko M.F., Kalyuzhnyi Y.V., Analytic solution of the reference interaction site model equation for a mixture of hard spheres and symmetric rigid molecules, J. Phys.: Condens. Matter., 1989, No. 1, 2891–2909.
3. Nezbeda I., Kolafa J., Kalyuzhnyi Y.V., Primitive model of water. 2. Theoretical results for the structure and thermodynamic properties, Mol. Phys., 1989, **68**, No. 1, 143–160.
4. Holovko M.F., Kalyuzhnyi Y.V., On the application of the exp-like approximation for the description of the site site ion-molecular models, Mol. Phys., 1989, **68**, No. 6, 1239–1253.
5. Holovko M.F., Kalyuzhny Y.V., Heinzinger K., Electrostatic and packing contributions to the structure of water and aqueous-electrolyte solutions, Z. Naturforschung, 1990, **45 A**, No. 5, 687–694.
6. Kalyuzhnyi Y.V., Holovko M.F., Nezbeda I., Analytic solution of the RISM equation for n_s-atomic symmetrical molecules, Czech. J. Phys., 1990, **40**, No. 10, 1098–1106.
7. Kalyuzhnyi Y.V., Nezbeda I., Analytical solution of Wertheims OZ equation for the Smith-Nezbeda model of associated liquids, Mol. Phys., 1991, **73**, No. 3, 703–713.
8. Holovko M.F., Kalyuzhnyi Y.V., On the effects of association in the statistical-theory of ionic systems. Analytic solution of the PY-MSA version of the Wertheim theory, Mol. Phys., 1991, **73**, No. 5, 1145–1157.
9. Smith D.E., Kalyuzhnyi Y.V., Haymet A.D.J., Computer-simulation of a model 2-2 electrolyte: Multiple time-step molecular-dynamics, J. Chem. Phys., 1991, **95**, No. 12, 9165–9171.
10. Kalyuzhnyi Y.V., Holovko M.F., Haymet A.D.J., Integral-equation theory for associating liquids: Weakly associating 2-2 electrolytes, J. Chem. Phys., 1991, **95**, No. 12, 9151–9164.
11. Kalyuzhnyi Y.V., Stell G., On the effects of association in fluids with spherically symmetrical interactions. 1. Cluster expansions and integral-equations, Mol. Phys., 1993, **78**, No. 5, 1247–1258.
12. Kalyuzhnyi Y.V., Protsykevytch I.A., Holovko M.F., Solution of the associative Percus-Yevick approximation for the n-component mixture of dimerizing hard-spheres, Chem. Phys. Lett., 1993, **215**, No. 1–3, 1–4.
13. Kalyuzhnyi Y.V., Vlachy V., Integral-equation theory for highly asymmetric electrolyte solutions, Chem. Phys. Lett., 1993, **215**, No. 5, 518–522.
14. Kalyuzhnyi Y.V., Holovko M.F., An analytical study of the effects of association in a 2-2 electrolyte solution. 1. Associative mean spherical approximation, Mol. Phys., 1993, **80**, No. 5, 1165–1176.
15. Kalyuzhnyi Y.V., Stell G., Llano-Restrepo M.L., Chapman W.G., Holovko M.F., Primitive models of chemical association. 1. Theory and simulation for dimerization, J. Chem. Phys., 1994, **101**, No. 9, 7939–7952.
16. Fedotova M.V., Kalyuzhnyi Y.V., Kuznetsov V.V., Nikologorskaja V.L., Trostin V.N., Golovko M.F., Application of x-ray-diffraction analysis and methods integral-equations in the description of the structure of lithium-chloride high-concentrated aqueous-solutions, Izvestiya vysshikh uchebnykh zavedenii. Khimiya i khimicheskaya tekhnologiya, 1994, **37**, No. 7–9, 35–40.
17. Kalyuzhnyi Y.V., Stell G., Holovko M.F., Analytical solution of the multidensity OZ equation for polymerizing fluid, Chem. Phys. Lett., 1995, **235**, No. 3–4, 355–364.
18. Kalyuzhnyi Y.V., Vlachy V., Holovko M.F., Stell G., Multidensity integral-equation theory for highly asymmetric electrolyte-solutions, J. Chem. Phys., 1995, **102**, No. 14, 5770–5780.
19. Kalyuzhnyi Y.V., Stell G., Solution of the polymer MSA for the polymerizing primitive model of electrolytes, Chem. Phys. Lett., 1995, **240**, No. 1–3, 157–164.
20. Kalyuzhnyi Y.V., Cummings P.T., Solution of the polymer Percus-Yevick approximation for the multicomponent totally flexible sticky 2-point model of polymerizing fluid, J. Chem. Phys., 1995, **103**, No. 8, 3265–3267.
21. Kalyuzhnyi Y.V., Pizio O., Sokolowski S., Density profiles of one-component shielded sticky point fluid near a hard-wall, Chem. Phys. Lett., 1995, **242**, No. 3, 297–303.

22. Chialvo A.A., Kalyuzhnyi Y.V., Cummings P.T., Molecular-based approach to gas solubility at near-critical conditions, ACS Symp. Ser., 1995, **608**, No. 34–46.

23. Duda Y.J., Kalyuzhnyi Y.V., Holovko M.F., Solution of the associative mean spherical approximation for the shielded sticky point electrolyte model, J. Chem. Phys., 1996, **104**, No. 3, 1081–1089.

24. Kalyuzhnyi Y.V., Cummings P.T., Phase diagram for the dimerizing hard-core Yukawa fluid, Mol. Phys., 1996, **87**, No. 1, 249–255.

25. Chialvo A.A., Kalyuzhnyi Y.V., Cummings P.T., Solvation thermodynamics of gas solubility at sub-and near-critical conditions, AlChE J., 1996, **42**, No. 2, 571–584.

26. Kalyuzhnyi Y.V., Cummings P.T., On the relation between the Wertheim's two-density integral equation theory for associating fluids and Chandler-Silbey-Ladanyi integral equation theory for site-site molecular fluids, J. Chem. Phys., 1996, **104**, No. 9, 3325–3328.

27. Kalyuzhnyi Y.V., Cummings P.T., Phase diagram for the Lennard-Jones fluid modelled by the hard-core Yukawa fluid, Mol. Phys., 1996, **87**, No. 6, 1459–1462.

28. Hribar B., Kalyuzhnyi Y.V., Vlachy V., Ion-ion correlations in highly asymmetrical electrolytes, Mol. Phys., 1996, **87**, No. 6, 1317–1331.

29. Blum L., Kalyuzhnyi Y.V., Bernard O., Herrera-Pacheco J.N., Sticky charged spheres in the mean-spherical approximation: A model for colloids and polyelectrolytes, J. Phys.: Condens. Matter., 1996, **8**, No. 25A, A143–A167.

30. Kalyuzhnyi Y.V., Cummings P.T., Solution of the Chandler-Silbey-Ladanyi equation for the multicomponent hard-sphere site-site molecular fluid: Percus-Yevick approximation, J. Chem. Phys., 1996, **105**, No. 5, 2011–2019.

31. Kalyuzhnyi Y.V., Lin C.T., Stell G., Primitive models of chemical association. 2. Polymerization into flexible chain molecules of prescribed length, J. Chem. Phys., 1997, **106**, No. 5, 1940–1949.

32. Kalyuzhnyi Y.V., Blum L., Holovko M.F., Protsykevytch I.A., Primitive model for highly asymmetric electrolytes. Associative mean spherical approximation, Physica A, 1997, **236**, No. 1–2, 85–96.

33. Rebolj N., Kristl J., Kalyuzhnyi Y.V., Vlachy V., Structure and thermodynamics of micellar solutions in isotropic and cell models, Langmuir, 1997, **13**, No. 14, 3646–3651.

34. Hribar B., Krienke H., Kalyuzhnyi Y.V., Vlachy V., Dilute solutions of highly asymmetrical electrolytes in the primitive model approximation, J. Mol. Liq., 1997, **73**, No. 4, 277–289.

35. Protsykevytch I.A., Kalyuzhnyi Y.V., Blum L., Holovko M.F., Solution of the polymer mean spherical approximation for the totally flexible sticky two-point electrolyte model, J. Mol. Liq., 1997, **73**, No. 4, 1–20.

36. Duda Y., Vakarin E., Kalyuzhnyi Y., Holovko M., Analytical treatment of the fused hard-sphere chain model. $0.5 < L < 1$, Physica A, 1997, **245**, No. 3–4, 393–410.

37. Kalyuzhnyi Y.V., Holovko M.F., Thermodynamics of the associative mean spherical approximation for the fluid of dimerizing particles, J. Chem. Phys., 1998, **108**, No. 9, 3709–3715.

38. Chialvo A.A., Cummings P.T., Kalyuzhnyi Y.V., Solvation effect on kinetic rate constant of reactions in supercritical solvents, AlChE J., 1998, **44**, No. 3, 667–680.

39. Lin C.T., Kalyuzhnyi Y.V., Stell G., Primitive models of chemical association. III. Totally flexible sticky two-point model for multicomponent heteronuclear fixed-chain-length polymerization, J. Chem. Phys., 1998, **108**, No. 15, 6513–6524.

40. Kalyuzhnyi Y.V., Lin C.T., Stell G., Primitive models of chemical association. IV. Polymer Percus-Yevick ideal-chain approximation for heteronuclear hard-sphere chain fluids, J. Chem. Phys., 1998, **108**, No. 15, 6525–6534.

41. Kalyuzhnyi Y.V., Vlachy V., Study of a model polyelectrolyte solution with directional attractive forces between the macroions, J. Chem. Phys., 1998, **108**, No. 18, 7870–7875.

42. Kalyuzhnyi Y.V., Thermodynamics of the polymer mean-spherical ideal chain approximation for a fluid of linear chain molecules, Mol. Phys., 1998, **94**, No. 4, 735–742

43. Predota M., Nezbeda I., Kalyuzhnyi Y.V., Fluids of pseudo-hard bodies II. Reference models for water, methanol, and ammonia, Mol. Phys., **94**, No. 6, 937–948.

44. Stell G., Lin C.T., Kalyuzhnyi Y.V., Equations of state of freely jointed hard-sphere chain fluids: Numerical results, J. Chem. Phys., 1999, **110**, No. 11, 5458–5468.
45. Stell G., Lin C.T., Kalyuzhnyi Y.V., Equations of state of freely jointed hard-sphere chain fluids: Theory, J. Chem. Phys., 1999, **110**, No. 11, 5444–5457.
46. Kalyuzhnyi Y.V., Chandler-Silbey-Ladanyi integral equation theory for semiflexible molecules, Mol. Phys., 1999, **96**, No. 8, 1289–1294.
47. Kalyuzhnyi Y.V., Cui S.T., Cummings P.T., Cochran H.D., Distribution functions of a simple fluid under shear: Low shear rates, Phys. Rev. E, 1999, **60**, No. 2, 1716–1723.
48. Lin C.T., Stell G., Kalyuzhnyi Y.V., Structural and thermodynamic properties of freely-jointed hard-sphere rings and chains, J. Chem. Phys., 2000, **112**, No. 6, 3071–3081.
49. Urbic T., Vlachy V., Kalyuzhnyi Y.V., Southall N.T., Dill K.A., A two-dimensional model of water: Theory and computer simulations, J. Chem. Phys., 2000, **112**, No. 6, 2843–2848.
50. Kalyuzhnyi Y.V., Blum L., Rescic J., Stell G., Solution of the associative mean spherical approximation for a multicomponent dimerizing hard-sphere multi-Yukawa fluid, J. Chem. Phys., 2000, **113**, No. 3, 1135–1142.
51. Krienke H., Barthel J., Holovko M., Protsykevich I., Kalyuzhnyi Y., Osmotic and activity coefficients of strongly associated electrolytes over large concentration ranges from chemical model calculations, J. Mol. Liq., 2000, **87**, No. 2–3, 191–216.
52. Kalyuzhnyi Y.V., Holovko M.F., Vlachy V., Highly asymmetric electrolytes in the associative mean-spherical approximation, J. Stat. Phys., 2000, **100**, No. 1–2, 243–265.
53. Chialvo A.A., Kusalik P.G., Kalyuzhnyi Y.V., Cummings P.T., Applications of integral equation calculations to high-temperature solvation phenomena, J. Stat. Phys., 2000, **100**, No. 1–2, 167–199.
54. Kalyuzhnyi Y.V., Cui S.T., Cochran H.D., Distribution functions of a simple fluid under shear. II. High shear rates, Phys. Rev. E, 2001, **63**, No. 1, 011209.
55. Duda Y., Lee L.L., Kalyuzhnyi Y., Chapman W., Ting P.D., Structures of fused-dimer fluids: A new closure based on the potential distribution theorems, J. Chem. Phys., 2001, **114**, No. 19, 8484–8491.
56. Duda Y., Lee L.L., Kalyuzhnyi Y., Chapman W., Ting P.D., Structure and bridge functions of fused-sphere dimeric fluids, Chem. Phys. Lett., 2001, **339**, No. 1–2, 89–95.
57. Kalyuzhnyi Y.V., Cummings P.T., Multicomponent mixture of charged hard-sphere chain molecules in the polymer mean-spherical approximation, J. Chem. Phys., 2001, **115**, No. 1, 540–551.
58. Kalyuzhnyi Y.V., Druchok M.Y., Structure of a 3-component polyelectrolyte solution model with dimerizing counterions and coions, J. Mol. Liq., 2001, **92**, No. 1–2, 97–103.
59. Kalyuzhnyi Y.V., Lin C.T., Stell G., Yethiraj A., Structural and thermodynamic properties of a freely-jointed Yukawa hard-sphere chain fluid, J. Mol. Liq., 2001, **92**, No. 1–2, 85–96.
60. Kalyuzhnyi Y.V., Vlachy V., Dill K.A., Hydration of simple ions. Effect of the charge density, Acta Chimica Slovenica, 2001, **48**, No. 3, 309–316.
61. Urbic T., Vlachy V., Kalyuzhnyi Y.V., Southall N.T., Dill K.A., A two-dimensional model of water: Solvation of nonpolar solutes, J. Chem. Phys., 2002, **116**, No. 2, 723–729.
62. McCabe C., Kalyuzhnyi Y.V., Cummings P.T., Thermodynamic properties of freely-jointed hard-sphere multi-Yukawa chain fluids: theory and simulation, Fluid Phase Equilib., 2002, **194**, 185–196.
63. Kalyuzhnyi Y.V., McCabe C., Cummings P.T., Stell G., Structural and thermodynamic properties of a multicomponent freely jointed hard sphere multi-Yukawa chain fluid, Mol. Phys., 2002, **100**, No. 15, 2499–2517.
64. Urbic T., Vlachy V., Kalyuzhnyi Y.V., Dill K.A., Orientation-dependent integral equation theory for a two-dimensional model of water, J. Chem. Phys., 2003, **118**, No. 12, 5516–5525.
65. Kalyuzhnyi Y.V., Cummings P.T., Yukawa sticky m-point model of associating fluid, J. Chem. Phys., 2003, **118**, No. 14, 6437–6445.
66. Kalyuzhnyi Y.V., Kahl G., Phase coexistence in polydisperse liquid mixtures: Beyond the van der Waals approximation, J. Chem. Phys., 2003, **119**, No. 14, 7335–7343.
67. Kalyuzhnyi Y.V., Kahl G., Cummings P.T., Phase coexistence in polydisperse charged hard-sphere fluids: Mean spherical approximation, J. Chem. Phys., 2004, **120** No. 21, 10133–10145.

68. Vlachy V., Hribar-Lee B., Kalyuzhnyi Y.V., Dill K.A., Short-range interactions: from simple ions to polyelectrolyte solutions, Current opinion in colloid interface science, 2004, **9**, No. 1–2, 128–132.

69. Kalyuzhnyi Y.V., McCabe C., Whitebay E., Cummings P.T., Equation of state and liquid-vapor equilibria of one- and two-Yukawa hard-sphere chain fluids: Theory and simulation, J. Chem. Phys., 2004, **121**, No. 16, 8128–8137.

70. Baig C., Kalyuzhnyi Y.V., Cui S.T., Cochran H.D., Structure of a sheared soft-disk fluid from a nonequilibrium potential, Phys. Rev. E, 2004, **70**, No. 6, 061204.

71. Kalyuzhnyi Y.V., Kahl G., Cummings P.T., Phase coexistence in a polydisperse charged hard-sphere fluid: Polymer mean spherical approximation, J. Chem. Phys., 2005, **123**, No. 12, 124501.

72. Kalyuzhnyi Y.V., Kahl G., Cummings P.T., Towards the phase diagram of a polydisperse mixture of charged hard spheres, Europhys. Lett., 2005, **72**, No. 1, 96–102.

73. Druchok M., Kalyuzhnyi Y., Rescic J., Vlachy V., Analysis of osmotic pressure data for aqueous protein solutions via a multicomponent model, J. Chem. Phys., 2006, **124**, No. 11, 114902.

74. Kalyuzhnyi Y.V., Cummings P.T., Solution of the mean spherical approximation for polydisperse multi-Yukawa hard-sphere fluid mixture using orthogonal polynomial expansions, J. Chem. Phys., 2006, **124**, No. 11, 114509.

75. Kalyuzhnyi Y.V., Hlushak S.P., Phase coexistence in polydisperse multi-Yukawa hard-sphere fluid: High temperature approximation, J. Chem. Phys., 2006, **125**, No. 3, 034501.

76. Bizjak A., Rescic J., Kalyuzhnyi Y.V., Vlachy V., Theoretical aspects and computer simulations of flexible charged oligomers in salt-free solutions, J. Chem. Phys., 2006, **125**, No. 21, 214907.

77. Kalyuzhnyi Y.V., Vlachy V., Cummings P.T., Modeling solution of flexible polyelectrolyte in explicit solvent, Chem. Phys. Lett., 2007, **438**, No. 4–6, 238–243.

78. Kalyuzhnyi Y.V., Cummings P.T., Phase coexistence in polydisperse mixture of hard-sphere colloidal and flexible chain particles, Chem. Phys. Lett., 2007, **443**, No. 4–6, 243–247.

79. Boncina M., Rescic J., Kalyuzhnyi Y.V., Vlachy V., Computer simulations and theoretical aspects of the depletion interaction in protein-oligomer mixtures, J. Chem. Phys., 2007, **127** , No. 3, 035103.

80. Hlushak S.P., Kalyuzhnyi Y., Phase coexistence in the hard-sphere Yukawa chain fluid with chain length polydispersity: High temperature approximation, Chem. Phys. Lett., 2007, **446**, No. 4–6, 285–291.

81. Henderson D., Trokhymchuk A., Kalyuzhnyi Y.V., Gee R., Lacevic N., Integral equation study of particle confinement effects in a polymer/particle mixture, J. Phys. Chem. C, 2007, **111**, No. 43, 15625–15633.

82. Urbic T., Vlachy V., Kalyuzhnyi Y.V., Dill K.A., An improved thermodynamic perturbation theory for Mercedes-Benz water, J. Chem. Phys., 2007, **127**, No. 17, 174511.

83. Urbic T., Vlachy V., Kalyuzhnyi Y.V., Dill K.A., Theory for the solvation of nonpolar solutes in water, J. Chem. Phys., 2007, **127**, No. 17, 174505.

84. Kalyuzhnyi Y.V., Protsykevytch I.A., Cummings P.T., Thermodynamic properties and liquid-gas phase diagram of the dipolar hard-sphere fluid, EPL, 2007, **80**, No. 5, 56002.

85. Kalyuzhnyi Y.V., Protsykevitch I.A., Cummings P.T., Liquid-gas phase behavior of Stockmayer fluid with high dipolar moment, Condens. Matter Phys., 2007, **10**, No. 4, 553–562.

86. Hlushak S.P., Kalyuzhnyi Y.V., Cummings P.T., Phase coexistence in polydisperse athermal polymer-colloidal mixture, J. Chem. Phys., 2008, **128**, No. 15, 154907.

87. Chialvo A.A., Chialvo S., Simonson J.M., Kalyuzhnyi Y.V., Solvation phenomena in dilute multi-component solutions I. Formal results and molecular outlook, J. Chem. Phys., 2008, **128**, No. 21, 214512.

88. Hlushak S.P., Kalyuzhnyi Y.V., Phase coexistence in the hard-sphere Yukawa chain fluid with chain length polydispersity: Dimer thermodynamic perturbation theory, J. Chem. Phys., 2008, **129**, No. 22, 224901.

89. Kalyuzhnyi Y.V., Protsykevytch I.A., Ganzenmuller G., Camp P.J., Liquid-vapour coexistence in the dipolar Yukawa hard-sphere fluid, EPL, 2008, **84**, No. 2, 26001.

90. Kalyuzhnyi Y.V., Vlachy V., Dill K.A., Aqueous alkali halide solutions: can osmotic coefficients be explained on the basis of the ionic sizes alone? Phys. Chem. Chem. Phys., 2010, **12**, No. 23, 6260–6266.

91. Kalyuzhnyi Y.V., Docherty H., Cummings P.T., Resummed thermodynamic perturbation theory for central force associating potential: One-patch model, J. Chem. Phys., 2010,**133** No. 4, 044502.

92. Protsykevytch I.A., Kalyuzhnyi Y.V., Cummings P.T., Phase behavior of a simple model of ferro-colloidal fluid, Chem. Phys. Lett., 2011, **503**, No. 4–6, 226–230.

93. Kalyuzhnyi Y.V., Iacovella C.R., Docherty H.,Holovko M., Cummings P.T., Network froming fluids: Yukawa Square-Well m-point model, J. Stat. Phys., 2011, **144**, No. 3.