SCCS 2014

International Conference on
Strongly Coupled Coulomb Systems

July 27th-August 1st
Santa Fe, New Mexico, USA

15:30–15:45 Contributed **A. E. Davletov, L. T. Yerimbetova, A. K. Ospanova & Ye. S. Mukhametkarimov**, "Polarization and finite size effects in correlation functions of dusty plasmas"

15:45–16:00 Contributed **T. S. Ramazanov**, "Strongly Coupled Complex Plasmas: Effective Potentials and Physical Properties"

16:00–16:15 **Coffee Break – Lumpkin Ballroom North**

16:15–18:00 **Poster Session 3 – Lumpkin Ballroom North**

Poster 3.01 **Bedros Afeyan**, "Nonlinear Kinetic Self-Organized Asymptotic States in High Energy Density Plasmas: Pump-Probe df/dv Diagnostics from the Visible to X-Rays"

Poster 3.02 **D. Batryshevi, T. Ramazanov, M. Dosbolayev, M. Gabdullin & S. Orazbayev**, "Method of separation of polydisperse particles in plasma of radio frequency discharge"

Poster 3.03 **David Michta, Liam G. Stanton, Mike Surh, Frank Graziani & Michael S. Murillo**, "A Non-Born-Oppenheimer Molecular Dynamics Method for Dense Plasmas"

Poster 3.04 **G. A. Pavlov, N. A. Suslov, V. M. Treushnikov, P. V. Garanin, Y. V. Pozdnyakov, V. V. Treushnikov & N. V. Zhidkov**, "Registration of clots images of dense plasma in the hard X-ray range"

Poster 3.05 **G. J. Kalman, Z. Donkó, P. Hartmann, K. I. Golden & L. Silvestri**, "Collective modes in binary systems: Coulomb vs. Yukawa"

Poster 3.06 **Gautham Dharuman, Guclu Yaman, Andrew Christlieb, John Verboncoeur & Michael S. Murillo**, "Molecular Dynamics Simulation with Momentum Dependent Potentials: Comparison of High Order Symplectic Integrators"

Poster 3.07 **H. D. Whitley, M. P. Desjarlais, C. R. Scullard, L. X. Benedict, J. I. Castor, M. S. Murillo & F. R. Graziani**, "Electronic transport properties of dense plasma"

Poster 3.08 **H. Kählert, G. J. Kalman & M. Bonitz**, "Kinetic approach to the dynamics of inhomogeneous strongly coupled plasmas"

Poster 3.09 **I. A. Valuev, N. A. Kazeev & I. V. Morozov**, "Simulation of Confined System of Interacting Fermions by Antisymmetrized Wave Packet Molecular Dynamics"

Poster 3.10 **I. Korolov, G. J. Kalman, L. Silvestri & Z. Donkó**, "Molecular Dynamics simulations of the classical one-component Coulomb plasma over the range $0.05 \leq \Gamma \leq 10000$"

Poster 3.11 **M. K. Dosbolayev, T. S. Ramazanov & A. U. Utegenov**, "Investigation of dusty plasma properties in various gas mixtures"

Poster 3.12 **M. M. Muratov, T. S. Ramazanov, K. N. Dzhumagulova & J. A. Goree**, "Pressure of the Dust Component Due to the Interaction"

Method of separation of polydisperse particles in plasma of radio–frequency discharge

D. Batryshev[1,2,*], T. Ramazanov[1,2], M. Dosbolayev[1,2], M. Gabdullin[1,2], S. Orazbayev[1]
[1]Institute of experimental and theoretical physics, Al-Farabi Kazakh National University, 71, al-Farabi av., Almaty,050040,Kazakhstan
[2] National nanotechnological laboratory of open type, Al-Farabi Kazakh National University,71, al-Farabi av., Almaty, 050040, Kazakhstan

Monodisperse particles are particles which have the same geometrical parameters or phase states. For a strictly monodisperse system, the size distribution curve for such a system is represented by a narrow peak of Gaussian distribution.

In this paper the method of polydisperse particles separation in plasma of radio-frequency discharge for obtaining of monodisperse particles are considered. Difference of proposed method from other one is external influence absence of impurity, because the separation process goes in a plasma reactor, also it is possible to use a different kind of materials for separation [1]. Mechanism of this method based on using a special form of plasma (electric) field, which allows to select and collect dusty particles by mass from crystal-like structure of dusty plasma. A condition for obtaining monodisperse particles is spherical form of particles, in other cases we can only speak about the smallness dispersions of separated particles.The experimental setup was described in detail in previous works [2].

The experiment was carried out in argon plasma at constant pressure of argon gas 0.3 Torr and different power of discharge. For separation polydisperse spherical particles of glass (SiO_2) with diameters 1 – 100 μmhave been used. After separation obtained particles had diameters 5 μm. Range of separation is 600 nm - 50 μm.

*batryshev@physics.kz

[1] V. Gente, F.L. Marca, F. Lucci, P. Massacci, Waste Management 23, 951–958 (2003)
[2] Dosbolayev M.K., Utegenov A.U., Ramazanov T.S., Daniyarov T.T. Structural and transport properties of dust formation in plasma of noble gases mixture in RF discharge // Contrib. PlasmaPhys. – 2013. – V. 53, №. 4-5. – P. 426-431.