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Dense plasma in supercritical argon fluid with long-lived clusters<sup>1</sup> SEUNGTAEK LEE, JUHO LEE, DONG EON KIM, GUNSU YUN, Pohang University of Science and Technology — Long-lived (over an hour) argon clusters are observed in supercritical argon fluid produced by continual compression into a high-pressure chamber (up to 300 bar). Laser scattering images show the Brownian motion of the clusters with the typical size of a few hundreds nanometers. In super-critical argon fluid with dense population of clusters (~ 1000 cm<sup>-3</sup>), jet-like plasmas are produced by ns pulse laser (532 nm, 6 ns, 400 mJ, peak intensity ~ 1 TW/cm<sup>2</sup>). The lifetime of the plasma jet is much longer than the laser pulse duration and becomes longer for higher number density of clusters. The electron temperature and density estimated from spectroscopic measurements are ~ 1 eV and ~  $10^{21}$ cm<sup>-3</sup>, respectively. This suggests that the plasma jet has a high Coulomb coupling constant of the order of unity.

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