Bulk Quantities of Noble Gas Nanoclusters with Five-Fold Symmetry Stabilized in Superfulid Helium

V. KIRYUKHIN, Rutgers Univ, E.P. BERNARD, V.V. KIMELENKO, R.E. BOLTNEV, D.M. LEE, Cornell Univ., N.V. KRAINYUKOVA, Inst. Low Temp. Phys., Kharkov, Ukraine — Bulk quantities (volume~cm\(^3\), atomic density~\(10^{19}-10^{20}\) cm\(^{-3}\)) of noble gas nanoclusters (size~5-6 nm) were produced in superfluid helium by injection technique. X-ray diffraction measurements show that the samples consist of weakly interacting nanoclusters with five-fold symmetry axes, such as icosahedra and decahedra. These results open new opportunities for fundamental research of nanoclusters of noble gases and other materials in well-controlled environments using experimental techniques requiring bulk samples.