

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Abundant generation of quasimonoenergetic ions by Coulomb explosions of optimized nanostructure MASAKATSU MURAKAMI, KUNIOKI MIMA, ILE, Osaka Univ. — In Coulomb explosions of spherical clusters composed of two ion species (light and heavy), the initial density profile of light ions is optimized to have iso-Coulomb potentials. This results in the generation of many quasimonoenergetic ions with the highest possible energy coupling. The overall coupling efficiency (equal to the summed kinetic energy of the light ions in the highest 1-percent energy band divided by total kinetic energy of both ions) is estimated to be as high as 30-40 percent in a one-dimensional simulation. The monoenergeticity and efficiency can be further improved by using even more ion species or by exploiting different ionization levels of the heavy ions. The present scheme has high potential to provide a reasonably efficient method for generating quasimonoenergetic ions for practical applications.

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Date submitted: 15 Jul 2009

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