

Abstract Submitted  
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**Explosion of Layered Nanoplasmas** JOANA MARTINS, MARTA FARJADO, RICARDO FONSECA, LUIS SILVA, GoLP/CFP, Instituto Superior Tecnico, Lisbon, Portugal, FABIO PEANO, Dipartimento di Energetica, Politecnico di Torino, Italy — Ultra-intense laser pulses can drive Coulomb explosions in clusters. Recently, we have demonstrated the possibility to control these explosions by driving large-scale shock shells inside large clusters. We have explored the possibility for additional control of the explosion by considering clusters with heterogeneous compositions, either using layered targets or large clusters/liquid droplets with different compositions. These scenarios were explored with multi-dimensional particle-in-cell simulations with OSIRIS 2.0. Our results show that even for heterogeneous clusters, the dynamics of the explosion can be controlled. The presence of different ionization states and charge to mass ratios increases the complexity of the phenomena, leading to explosions occurring on different time scales for the different ion species, leading to modulations in the time-dependent spectrum of the accelerated ions.

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