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Atomistic study of mixing at high Z / low Z interfaces at Warm Dense Matter Conditions[1] TOMORR HAXHIMALI, JAMES GLOSLI, ROBERT RUDD, Lawrence Livermore National Laboratory, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM — We use atomistic simulations to study different aspects of mixing occurring at an initially sharp interface of high Z and low Z plasmas in the Warm/Hot Dense Matter regime. We consider a system of Diamond (the low Z component) in contact with Ag (the high Z component), which undergoes rapid isochoric heating from room temperature up to 10˜eV, rapidly changing the solids into warm dense matter at solid density. We simulate the motion of ions via the screened Coulomb potential. The electric field, the electron density and ionizations level are computed on the fly by solving Poisson equation. The spatially varying screening lengths computed from the electron cloud are included in this effective interaction; the electrons are not simulated explicitly. We compute the electric field generated at the Ag-C interface as well as the dynamics of the ions during the mixing process occurring at the plasma interface. Preliminary results indicate an anomalous transport of high Z ions (Ag) into the low Z component (C); a phenomenon that is partially related to the enhanced transport of ions due to the generated electric field. These results are in agreement with recent experimental observation on Au-diamond plasma interface. (*W. Bang et al., Sci. Rep.* ***5****, 14318 (2015)*)

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