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**Shock responses of graphene reinforced composites via molecular dynamics simulations** HAILIN SHANG, WENQIANG WANG, Laboratory for Shock Wave and Detonation Physics, Institute of Fluid Physics, China Academy of Engineering Physics — Shock responses of graphene reinforced composites are investigated using molecular dynamics simulations. The first case studied is the response of spaced multilayer graphene plates under normal impact of a spherical projectile, focusing on the effect of the number of graphene monolayers per plate on the penetration resistance of the armor. The simulation results indicate that the penetration resistance increases with decreasing number of graphene monolayers per plate. The second case studied is the penetration resistance of laminated copper/graphene composites. The simulation results demonstrate that under normal impact by a spherical projectile the penetration resistance of copper can be improved significantly by laminating the copper plates with graphene. And the influence of graphene on the formation and growth of adiabatic shear bands in copper/graphene composites has also been discussed. The results of this research have revealed the possibility that graphene be used in the armor systems to enhance their penetration resistance.

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