Equation of state measurement of shock-released carbon KA-
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ENERGETICS TEAM — We present results of equation of state (EOS) measure-
ment of carbon at a range of conditions falling into the warm dense matter (WDM)
regime, solid density at temperatures $\sim 1 - 10$ eV. These conditions were created
within diamond and graphite targets at the Omega laser facility. We employed a
novel technique of laser driven shock and release, which produces different condi-
tions from the Hugoniot states typically studied at high power laser facilities. These
experiments take advantage of precise equation of state (EOS) measurements of
shocked low density SiO$_2$ aerogel foam used as pressure standard, which will also
be presented. A simultaneous measurements of density, temperature and ionization
state within the release wave were obtained from spatially resolved x-ray Thom-
son scattering, while the density and temperature measurements were bracketed by
independent diagnostics including velocity interferometry, optical pyrometry and ra-
diography, providing a full EOS measurement. Results will be compared with EOS
models.

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