**The equation of state of predominant detonation products**[1]

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— The equation of state of detonation products, when incorporated into an experimentally grounded thermochemical reaction algorithm can be used to predict the performance of explosives. Here we report laser based Impulsive Stimulated Light Scattering measurements of the speed of sound from a variety of polar and nonpolar detonation product supercritical fluids and mixtures. The speed of sound data are used to improve the exponential-six potentials employed within the Cheetah thermochemical code. We will discuss the improvements made to Cheetah in terms of predictions vs. measured performance data for common polymer blended explosives. Accurately computing the chemistry that occurs from reacted binder materials is one important step forward in our efforts.

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