

Abstract Submitted  
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**Small-scale Detonation Velocity Measurement of Select CL-20 Cocryystals** VASANT VUPPULURI, I. EMRE GUNDUZ, STEVEN F. SON, Purdue University — The challenge of developing novel energetic materials makes cocrySTALLIZATION using existing energetic molecules useful. CocrySTALLIZATION of CL-20 with other high explosives such as HMX has been demonstrated previously to yield novel energetic materials and may have favorable detonation performance. However, detonation performance characterization of these cocryystals is challenging due to limited availability of material. Also, the contribution of bonding energy between cofomers contained within the cocryystal is not well-understood. We present the comparison of steady detonation velocities of CL-20 cocryystals to their corresponding physical mixtures using microwave interferometry. With less than 1.5 g of the cocryystal material contained within 6.52 mm diameter charges, shot-to-shot variation in detonation velocity of only about 100 m/s are achievable with this technique. This variation is adequate to resolve relatively small differences between physical mixed explosive molecules and cocryystals.

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