

Abstract Submitted
for the SHOCK09 Meeting of
The American Physical Society

Detonation waves parameters for FEFO/nitrobenzene solution¹

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The dependence of detonation parameters for (bis-(2-fluoro-2,2-dinitroethyl) formal)/nitrobenzene solution (FEFO/NB) from NB concentration was defined. Velocity profiles of the boundary between HE and water window were recorded by laser interferometer VISAR. It was found that particle velocity in a pure FEFO was strongly oscillating with the oscillation amplitude ~ 50 m/s. It means that detonation front is unstable and irregularity size is about 10 mkm. The average velocity profile corresponds to ZND model. The reaction time is equal to ~ 400 ns, C-J pressure and particle velocity are 24 GPa and 2.0 km/s respectively. For FEFO/NB solution it was found that at low NB concentrations (10-20%) oscillations disappeared and detonation front was stable. When the NB concentration was increased up to 30 % high-frequency oscillations appeared again. The measurements of reaction zone structure up to critical concentration were conducted, it was about 45%. At average particle velocity profiles Von Neumann spike was distinctly registered. It was shown that in a pure FEFO and in solutions with NB concentration exceeding 30% detonation front was unstable.

¹This work was supported by ISTC project #3394.

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Date submitted: 06 Feb 2009

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