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Detonation performance of high-dense BTF charges ALEXANDER DOLGOBORODOV, MICHAEL BRAZHNIKOV, MICHAEL MAKHOV, ICP RAS, SERGEY GUBIN, IRINA MAKLASOVA, National Research Nuclear University “MEPhI” — New experimental data on detonation wave parameters and explosive performance for benzotrifuroxan (BTF) are presented. Optical pyrometry was applied in order to measure the temperature and pressure of BTF detonation products. Chapman-Jouguet pressure and temperature were obtained as following: 33.8 GPa and 3990 K; 34.5 GPa and 4170 K (initial charge densities 1.82 and 1.84 g/cc respectively), the polytropic exponent was estimated as 2.8. The heat of explosion and acceleration ability were measured also. The results of calorimetric measurements performed in bomb calorimeter indicate that BTF slightly surpasses HMX in the heat of explosion. However BTF is inferior to HMX in the acceleration ability, measured by the method of copper casing expansion. It is also considered the hypothesis of formation of nanocarbon particles in detonation products directly behind the detonation front and influence of this processes on the temperature-time history in detonation products. The results of calculations with in view of formation of liquid nanocarbon in products of a detonation also are presented.

Alexander Dolgoborodov
ICP RAS

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