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Photo and photothermal fragmentation of PETN molecules with selective photoinitiation

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Abstract

The temperature dependence of the efficiency of laser initiation (λ = 1060 nm) of pentaerythritol tetranitrate (PETN) under different conditions of initiation was investigated: pure PETN with open and closed surface, PETN with light-scattering additives (0.5% MgO) with the open surface. It was found out that closing of the surface and introduction of light-scattering additives lead to the change in the character of temperature dependence. The observed effect is associated with features of photoinduced fragmentation of PETN molecules in defective regions of the crystalline lattice, primarily in the surface layer of microcrystals. A possible model of such fragmentation is offered.