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## Compound Reactive Fragment Penetrating Steel Target

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**Abstract:** The damage effects of compound reactive fragment on steel target were studied. Using  $\Phi 12.7$  mm ballistic gun, the tests of compound reactive fragment penetrating A<sub>3</sub> steel target were carried out and recorded by a high speed camera. Results show that phenomenon of burning and explosion are obvious while reactive fragments penetrate target. The effect of deflagration produced by compound fragments with titanium powder and PTFE materials are better than that of fragments with aluminum powder and PTFE materials. The compound reactive fragment with thicker shell have a better penetrating effect on target. Comparing with the same dimension of inert steel fragment, the hole diameter of penetrating target is increased by about 40% for compound reactive fragment.

**Key words:** explosion mechanics; reactive fragment; reactive materials; penetration; terminal effect



## 捷克专家 Svatopluk Zeman 来绵讲学

应中国工程物理研究院化工材料研究所邀请, 捷克 Pardubice 大学含能材料研究所所长 Svatopluk Zeman 教授于 2009 年 10 月 19 日来绵讲学。

本次讲座主题涉及二元硝胺和多硝基芳香炸药的反应中心的确定、硝基甲烷起爆机理的研究新进展以及水和胺对其起爆机理的影响、双环 HMX 用于制备塑料粘结炸药的可行性等。报告中 Zeman 教授重点讲述了根据 NMR 化学位移确定多硝基化合物反应中心的方法, 低温热分解特性与撞击感度、静电火花感度和爆轰性能的相关性等方面的内容。他们的研究工作也体现了将实验手段与量化计算相结合的重要意义。

本次讲座气氛活跃, 大家对报告细节内容积极提问, 对热、撞击、冲击、静电火花等不同条件下的起爆机理是否相同等方面的问题展开了热烈的讨论, 达到了交流、学习和提高的目的。

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