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Title: Application of Digital Filter in Closed Bomb Test

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关键词: [材料科学](#); [发射药](#); [密闭爆发器](#); [数字滤波器](#); [燃烧性能](#)

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摘要: 为消除密闭爆发器测试压力信号中的杂波, 真实地反映发射药的燃烧性能, 采用有限冲激响应低通滤波和最小二乘结合的数字滤波器, 对密闭爆发器实验结果进行滤波。结果表明, 该数字滤波器能有效滤除测试信号中的杂波, 处理得到的u-p曲线较好地反映发射药的实际燃烧性能, lnu-lnp曲线光滑, 对局部压力段回归得到的燃速压力指数贴近发射药的真实值。

Abstract: In order to slake the noises from pressure signal obtained from closed bomb tests and express the combustion property of propellant more actually, a FIR lowpass filter combined with a least squares digital filter was used to treat the pressure signal obtained from the closed bomb test. The result shows that this digital filter can reduce the noises effectively, and the calculated u-p curves express the real combustion property of the propellant more precisely. Moreover, the lnu-lnp curves are smooth, and the pressure exponent of burning rate regressed from part of the curve is close to the real value of the propellant.

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