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BC501液体闪烁体对n-γ及能量的分辨与其尺寸的关系

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摘要 BC501液体闪烁体广泛应用于探测快中子，但测量伴随着很高的γ本底。为寻找具有较好的n-γ及能量分辨的BC501闪烁体，利用脉冲上升时间法，对几种不同尺寸的BC501闪烁体进行n-γ及能量分辨测量。在下阈0.75和1 MeV下，分别测量了Am-Be中子源的n-γ分辨谱以及相同条件下的γ上升时间-幅度谱。测量了d-T中子源14 MeV的反冲质子脉冲高度分布。对不同尺寸BC501闪烁体的n-γ及能量分辨进行了比较。实验表明，综合考虑n-γ和能量分辨，闪烁体的体积不应太大，长度应在保证效率的条件下适中选择。

关键词 BC501液体闪烁体 n-γ分辨 能量分辨

分类号

Relation of BC501 Scintillator Size and n-γ as Well as Energe Discrimination

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Abstract The BC501 scintillator has been widely used as a detector of fast neutron. A technique using pulse rise time separation method for the use of neutron-gamma pulse shape discrimination is reported. In order to search better scintillator of n-γ and energe discrimination, n-γ energe spectra are measured with BC501 scintillators with different size. A pulse rise time separation spectra of n and γ are obtained using Am Be neutron slowed by paraffine upon 0.75 and 1 MeV. In the same condition, γ-spectra are obtained by a ^{22}Na source, and the energe spectra of neutron are obtained by d-T 14 MeV neutron from accelerator. The n-γ and energe discrimination from the BC501 scintillators with different size is compared. By selecting a scintillator with suitable length and volume, the n-γ and energe discrimination is achieved extremely well.

Key words BC501 scintillator _ n-γ discrimination _ energe discrimination

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