

技术及应用

## 组织等效正比计数器测量系统的建立

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**摘要** 对组织等效正比计数器 (TEPC) 的方法原理和性能进行了初步研究, 在此基础上, 建立了一套TEPC测量系统, 用于测量中子、 $\gamma$ 混合辐射场的吸收剂量及剂量当量。中子辐射场通常伴随有 $\gamma$ 辐射。根据对混合辐射场测量得到的微剂量谱, 将 $\gamma$ 辐射的剂量贡献部分从中子辐射中区分出来。依据具体实验环境, 使用蒙特卡罗方法进行了模拟计算。计算结果与实验数据取得较好的一致性, 从而验证所建立的TEPC测量中子辐射场吸收剂量的方法是可行的。

**关键词** [组织等效正比计数器](#) [微剂量谱](#) [剂量当量](#) [蒙特卡罗方法](#)

分类号

## Construction of Tissue-Equivalent Proportional Counter System

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**Abstract** The principles and methods of tissue-equivalent proportional counter (TEPC) system were investigated. A set of measuring system based on TEPC was constructed, which was used to measure the absorbed dose and the dose equivalent in the neutron, gamma mixed field. There are always photons existing in the neutron field, so the micro-dosimetric spectra of mixed fields always include the two parts from photons and neutrons respectively. And the two parts can be simply separated according to their shapes. The micro-dosimetric spectra were obtained from the pulse height spectra, and the neutron and gamma components were analyzed. The simulation calculation was performed by Monte-Carlo method, whose result is in agreement with the measured data. Then, we know that the measurement of TEPC system is practicable.

**Key words** [tissue-equivalent](#) [proportional](#) [counter](#) [micro-dosimetric](#) [spectrum](#) [dose](#) [equivalent](#) [Monte-Carlo](#) [method](#)

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