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Gas detectors for microdosimetry

Thursday 17 October 2013 10:00 (1 hour)

FUNDAMENTALS
• Gas ionization
• Charge collection
• Cavity chambers

GAS DETECTORS for MICRODOSIMETRY
• Ionization Chambers
o Variance method
o Recombination Chambers

• Proportional Counters
o Principles of Operation
o Tissue Equivalent Proportional Counters (TEPC)
o TEPC Properties and Applications
o Multi-element TEPCs
o Heterogeneous Counters
o Wall-Less Counters

FUTURE NEEDS and CHALLENGES
• Size and sensitivity
• Neutron-Charge particle discrimination
• Calibration
• Signal Processing

Summary

Gas detectors remain the most common and the most used of all detector types in experimental microdosimetry. This lecture aims to provide the basis for understanding gas detector operation and to illustrate their application in microdosimetry and radiation measurement science. The discussion will conclude with a review of future needs and current technical challenges.

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