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## **Radiation Field Analysis with a multi-element TEPC, W. Matysiak, A. Hanu, A. Waker (UOIT, McMaster University, Ontario, Canada)**

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A multi-element TEPC detector consisting of 61 elongated cylindrical cavities drilled in a 5 cm by 5 cm cylindrical block of A-150 tissue equivalent plastic filled with low pressure tissue equivalent propane gas to simulate a 2 micrometer soft tissue site has been constructed and characterized for radiation protection neutron monitoring in nuclear power plants. However, by operating each active volume of the multi-element detector independently, the detector can be operated in the Coincidence-Anticoincidence Shield (CACS) mode. This operation mode allows the separation of charged and neutral components of a radiation field based on coincidence/anticoincidence events between the central and guard detectors. Further analysis of the neutral component to separate photon and neutron doses can be done based on linear energy transfer (LET) properties of the two radiation types. A theoretical feasibility study has been carried out of the operation of the METEPC in this mode for high energy proton beams typical of radiotherapy and space environments; the next stage in this work would be an experimental investigation and verification of charged-neutral particle discrimination using an METEPC.

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