



## **A Comparison of Thermal Properties for Etched and Unetched PADC Detector Exposed to High Doses of Gamma Radiation**

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### **ABSTRACT**

*Thermo gravimetric analysis of PADC (American Acrylics) detector exposed to gamma radiation indicates that due to gamma exposure, thermal stability of the detector decreases than the pristine one. Also, further due to chemical etching of the detector, the thermal stability decreases as comparison to the unetched one. The endothermic behavior of the detector due to loss of weight normally changes in the temperature range of around 375<sup>0</sup>C. Due to gamma exposure, this endothermic transition takes place at a lower temperature of around 350<sup>0</sup>C. Chemical etching of the detector further lowers the temperature of this endothermic transition. The amount of heat involved for the endothermic transition is around 5.66 J g<sup>-1</sup> for the pristine sample, whereas for irradiated samples, it is found to be 20.95 J g<sup>-1</sup>.*

**Keywords:** TGA, DTA, DSC, Gamma Dose, Etching.

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