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## Thermal studies of PADC Homalite detector and effect of gamma radiation on its thermal properties

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### ABSTRACT

*Thermal properties of PADC-Homalite Nuclear Track Detector is studied in the dose range of  $10^1$ – $10^6$  Gy and compared with the pristine one. Thermal analysis of the pristine Homalite detector reveals that first step of weight loss of the detector takes place in the temperature range of  $370^\circ\text{C}$  to  $420^\circ\text{C}$ , which is endothermic in nature. Due to gamma exposure the thermal stability of the detector does not change very significantly till the dose of  $10^4$  Gy. However, at the dose of  $10^5$  Gy and above, the detector loses its weight at lower temperature. Further, it is observed that at the dose of  $10^6$  Gy, in addition to two endothermic transition, another minor endothermic transition is also seen in the temperature range  $245^\circ\text{C}$  to  $270^\circ\text{C}$ .*

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

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