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## **Applications of Polysiloxane Plastic Scintillators in Nuclear Non-Proliferation and Beyond**

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### **Abstract:**

Plastic scintillators using polysiloxanes are a promising alternative to thermoplastic based plastic scintillators for deployment into the nuclear security industry for their ability to detect neutron and gamma radiation via pulse shape discrimination. Polysiloxane scintillators are inherently flexible, have short processing times, and are radiation resistant. In comparison thermoplastic scintillators have decreased durability and increased processing times. This work focuses on the radiation resistance qualities and degradation qualities of the polysiloxanes using an open-air environment and high intensity neutron-gamma radiation. In addition, the neutron-gamma discrimination qualities for use in neutron spectroscopy for fast energy neutrons will be discussed.