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## **Radiation, thermal and optical properties of PVA films containing arylazo pyridone dyes**

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Films based on polyvinyl alcohol (PVA) containing different concentrations of some arylazo pyridone dyes have been introduced as plastic detectors for dosimetry. PVA was chosen due to its water solubility and the possibility to incorporate a variety of dyes.

The significance of arylazo pyridone dyes resides in their simple synthesis and wide application areas. The following dyes were used in optical data storage, laser technology, dye-sensitized solar cells, non-linear optics and biological systems.

The advantage of polymeric films based on arylazo pyridone dyes is a visual change of color after exposure to gamma radiation, making them easy to use. In addition, this form of dosimeters is cheap and easily portable.

Films containing arylazo pyridone dyes change the color when irradiated with  $\gamma$ -radiation at least up to 20 kGy. The color changes were confirmed spectrophotometrically.

All synthesized films were characterized by FTIR. Optical properties have been analyzed on the basis of reflection and excitation spectra.

Thermal degradation processes of PVA films containing arylazo dyes were investigated with thermogravimetric analysis (TGA), derivative thermogravimetry (DTG), differential thermal analysis (DTA) and differential scanning calorimetry (DSC).



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