

## RADIATION STABILITY OF POLYAMIDE COMPOSITES CONTAINING RICE HUSK ASH

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The market requirement concerning the manufacture of biodegradable polymer products impose the study of various compositions of plastics. The valorization of natural products into polyamide formulations is a solution for preparation new resistant materials, which are friendly accepted.

This paper presents the stabilization behavior of polyamide composites containing rice husk ash, which are prepared by extruding at maximum working temperature of 300°C. Further, material consisting of polyamide 6 and 0, 10, 20 and 30 % (w/w) filler were irradiated with electron beam in air, at room temperature at following doses: 0, 100, 200, 6000 and 1000 kGy.

The evaluation of radiation stability is accomplished by FT-IR spectroscopy and chemiluminescence. The evolution of characteristic bands on amide group is studies during the thermal degradation in air and water. The chemiluminescence allows us to establish the life time of this kind of composites. The life time prediction is useful for depicting accelerated ageing while these materials are subjected to accidental events.

In order to demonstrate the contribution of rice husk ash to the material ability in the delaying oxidation, the comparison between pristine material and these different formulations of polyamide composites is done. These results are useful for the extension of application to the manufacture of cheap and valuable commodities, which are biodegradable in respect with basic polymer. The filler containing more than 92 % assure the chemical stability of matrix and does not induce significant oxidation into polyamide substrate. The high temperature resistance demonstrated by polyamide under EB irradiation<sup>1</sup> is a proof for the high quality of composites containing rice husk ash.

<sup>1</sup> Zaharescu, T., Andrade e Silva, L., Jipa, S., Kappel, W. *Radiat. Phys. Chem.* 2010, 79, 388.