



RAD2017 
CENTRAL EUROPEAN INITIATIVE

**FIFTH INTERNATIONAL CONFERENCE
ON RADIATION AND APPLICATIONS IN VARIOUS FIELDS OF RESEARCH**

12. 06. - 16. 06. 2017 | Budva | Montenegro | rad-conference.org

BOOK OF ABSTRACTS

GAMMA IRRADIATION AGEING STUDY OF ELASTOMERS BASED ON ETHYLENE/PROPYLENE/5-ETHYLIDENE-2-NORBORNENE RUBBER

**Milena Marinović-Cincović¹, Jaroslava Budinski-Simendić²,
Ayse Aroguz³, Vesna Teofilović², Vojislav Jovanović⁴,
Gordana Marković⁵, Suzana Samaržija-Jovanović⁴**

¹ University of Belgrade, Institute of Nuclear Sciences Vinča, Belgrade, Serbia

² University of Novi Sad, Faculty of Technology, Novi Sad, Serbia

³ Istanbul University, Engineering Faculty, Istanbul, Turkey

⁴ University of Priština, Faculty of Natural Science and Mathematics, Kosovska Mitrovica, Serbia

⁵ Tigar A.D., Pirot, Serbia

Elastomers based on ethylene propylene-diene-monomer rubber (EPDM) as network precursor have lot of applications. This materials are used as a medium for water resistance in electrical cable-jointing, roofing membranes (since it does not pollute the run-off rainwater, which is of vital importance for rainwater harvesting), in glass run channels, and appliance hose, o-rings, solar panel heat collectors, belts, electrical insulation, plastic impact modification, and many other applications. The most common use is in vehicles. It is used in door, window and trunk seals. EPDM granules can be mixed with polyurethane binders and troweled or sprayed onto concrete, asphalt, screenings, interlocking brick, wood to create a non-slip, soft, porous safety surface for wet-deck areas. The goal of this project was to study the effect of gamma irradiation on the properties of carbon black reinforced elastomers based on EPDM (ethylidene norbornene content 3.8 mass %) in combination with other network precursors (CSM or NBR). The compounds were cross-linked either with peroxide or sulfur. It was assessed that elastomers obtained with different curing systems have different sensitivities to gamma irradiation. It was estimated that the values for tensile strength, hardness, and modulus at 300% elongation for peroxide cross-linked elastomers were higher, but elongation at break values were lower when compared with sulfur cross-linked rubbers. Peroxide cross-linked samples were more stable at low doses, as their properties were maintained constant, whereas at higher doses, they showed severe degradation.



rad-conference.org

Silver sponsor



PerkinElmer[®]
For the Better