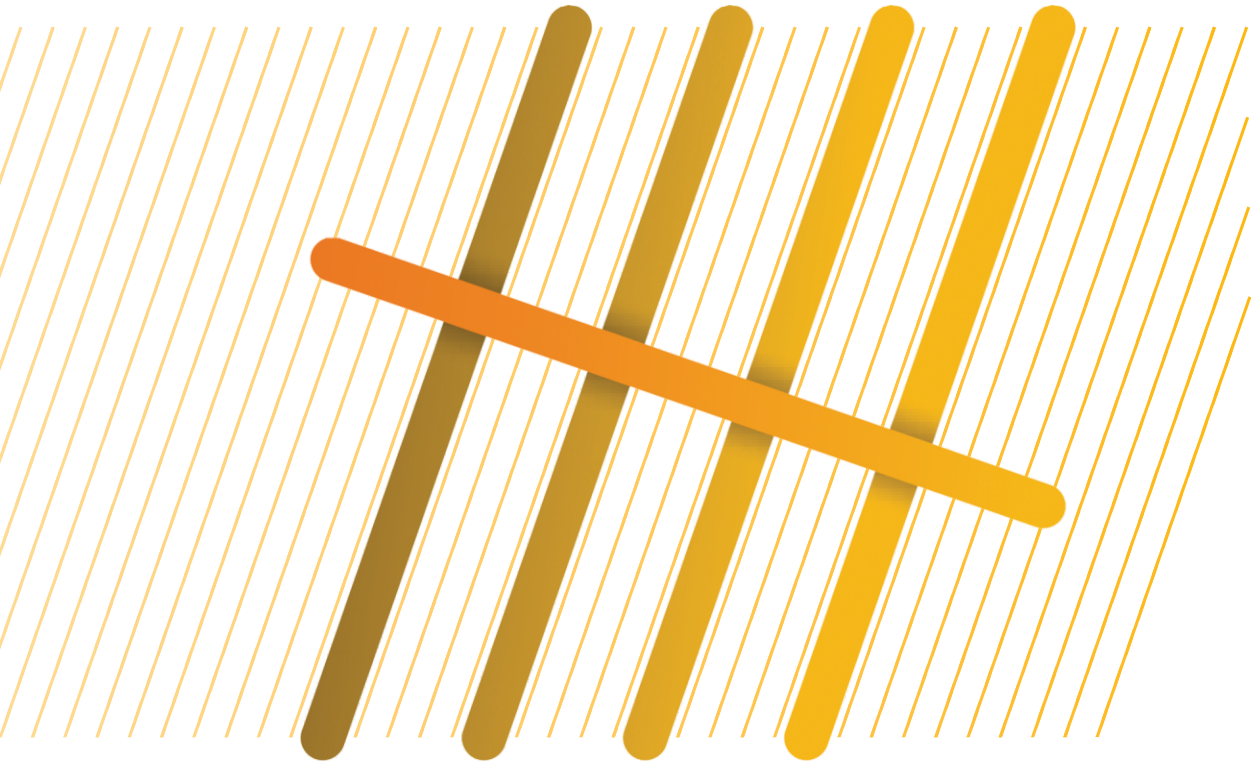

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BOOK OF ABSTRACTS

IRRADIATION RESISTANCE OF ELASTOMERS BASED ON TERNARY RUBBER BLENDS REINFORCED BY NANO FILLER

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Elastomers based on ternary rubber blends are industrially very important materials as they achieve the best compromise of different network precursor properties. In structuring of multi-phase material, characteristics of individual components can be partly preserved or significantly changed due to the effect of intermolecular interactions. In order to design the compound composition for elastomers, which will have good properties from technological aspect it is necessary to select a representative combination of network precursor. In this investigation, the irradiation resistance of elastomeric composites based on natural rubber (NR), butadiene rubber (BR) and styrene butadiene rubber (SBR) reinforced with carbon black (size of primary particles 28-36 nm) were studied. The sulfur curing behavior of compounds was estimated using the oscillating disk rheometer. All elastomeric composites were subjected to gamma irradiation different absorbed dose (100, 200, 400 kGy) with irradiation rate 10 kGy h^{-1}. The mechanical properties (hardness, modulus at 100% elongation, tensile strength, and elongation at break) were determined before and after irradiation of samples. It was assessed that tensile strength, modulus at 300% elongation and hardness increased, but elongation at break decreased with increasing irradiation dose. SBR as network precursor influenced appropriate toughness. NR as ternary blend component provided superior resilience. Prepared composites can be used in many industrial applications such as radio controlled model race car tires to footwear applications.

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