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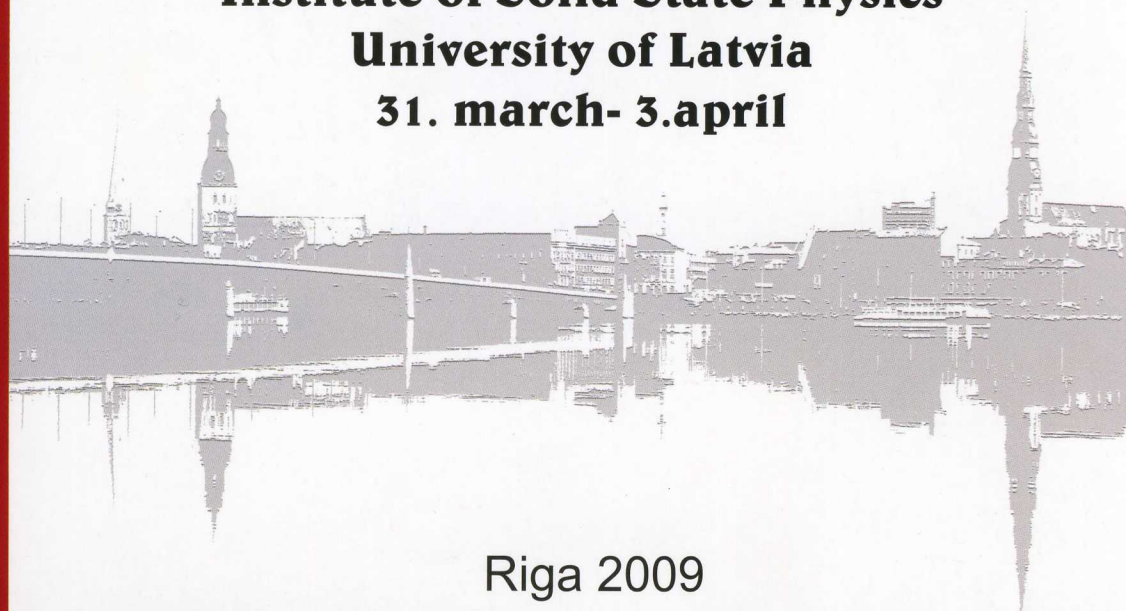

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THE PIEZORESISTIVE BEHAVIOR OF POLYISOPRENE – NANOSTRUCTURED CARBON COMPOSITE AT DIFFERENT LEVELS OF VULCANIZATION

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Polysisoprene - nanostructured carbon composites are treated as prospective multifunctional sensor materials [1]. They exhibit certain interesting mechano-electrical properties like piezo- and tensoresistivity [2]. Nanostructured carbon black (mean particle diameter - 30 nm, dibuthyl phthalate adsorption - 380ml/100g, specific surface - 950 m^2/g) is used as filler for raw rubber samples with 9 and 10 mass parts of conductive filler. To investigate a development of carbon nanoparticle cluster percolative structure during vulcanization process the test samples with different levels of vulcanization were prepared and the character of their piezoresistivity was established and compared. Measurements of mehanoelectrical properties as well as SEM investigations were carried out.

The results indicate that the balance between the maximum piezoresistivity and more complete relaxation of initial electrical resistivity of sample is critical. If one of them is greater, the other starts to lack useful dimensions and vice versa. The optimum vulcanization time was found out.

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