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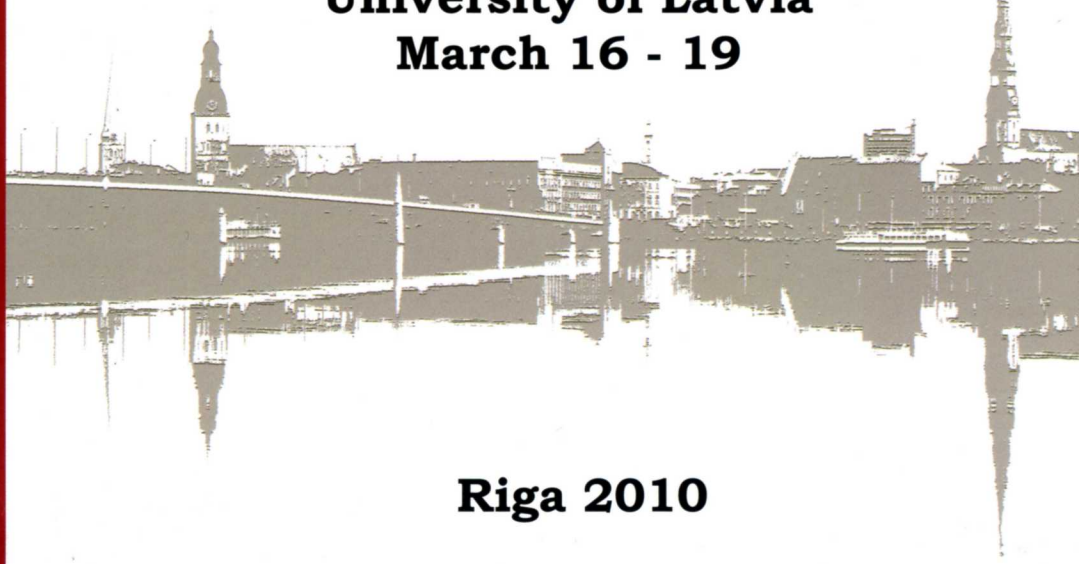
# Functional materials and nanotechnologies 2010

Institute of Solid State Physics
University of Latvia
March 16 - 19



Riga 2010

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The Organizing Committee sincerely hopes that the Conference will give all the participants new insights into the wide spread development of functional materials and nanotechnologies and will enhance the circulation of information released at the meeting.

On behalf of FM&NT-2010 organizers thank you all for coming and we wish you most successful and enjoyable Conference.

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# THE POLYISOPRENE – NANOSTRUCTURED CARBON COMPOSITE AS FLEXIBLE PRESSURE SENSOR MATERIAL – PROPERTIES AND PRACTICAL APPLICATIONS

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Polyisoprene - nanostructured carbon composite (PNCC) is often treated as a prospective multifunctional sensor material [1]. It has unique property to rapidly and reversibly change its electrical conductivity under applied external strain or pressure. More likely – under all types of external deformation it has a remarkable as well as reversible piezoresistive effect. To obtain PNCC, certain conditions must be taken into account, such as hyper elastic polymer matrix and high structure conductive carbon filler must be chosen. The previous research approved that unique properties are provided only after the composite is vulcanized [2].

In our work we present latest result on designing, preparing and obtaining the PNCC with necessary properties, as well our efforts on practical application of such material. The dependence of PNCC sensing properties on vulcanization time, pressure as well as filler type and concentration is evaluated. The completely-hyper elastic multi layer structural design is proposed to be used as a sensing element.

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