



Sub-area POB3: Modern materials for use in construction

Presentation title: Innovative materials for the simultaneous strengthening and monitoring of structures

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Abstract:

For over 30 years carbon fibres are used in construction. The technique of structural strengthening with externally bonded CFRP (Carbon Fibre Reinforced Polymers) tapes or sheets became the most popular technique of strengthening worldwide. In 2009 the team of the Department of Structural Engineering at Silesian University of Technology (SUT) in Poland after ten years of working with CFRP had initiated the research on the conductivity of carbon fibres for measuring strains of strengthened structural elements. During the next ten years, the research on carbon-based materials conducted at developed and opened new possibilities for smart materials for Structural Health Monitoring. The new paths of research are connected with smart carbon fibres reinforcing bars, cementitious and geopolymeric mortars reinforced with carbon fibres, carbon-based nanomaterials and other conductive materials.

This presentation shows main directions of the research of SUT team in the area of smart structural materials based on carbon, the achievements and recent advances.