

## **NEW MATERIALS AND TECHNOLOGIES FOR SATELLITE SYSTEMS, SPACE RESEARCH AND GROUND-BASED APPLICATIONS**

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### **SUMMARY**

New technology is developed for impregnation and covering of porous refractory materials with glassy carbon, and its application for space satellite experiments of measuring quasi-constant and alternate electric fields, carried out on the boards of eight satellites and International Space Station (ISS). The advantages of glassy carbon layer on the working area of the spherical sensors for assuring minimal variations of the electron work function are presented and analysed. Technological experiment (April 2013 – August 2015) on the board of ISS, assisted by DP-PM device on the outer surface of the Russian module is described – samples containing Al alloy and graphite, covered with glassy carbon, were studied for the influence of the open space on the physico-chemical properties of glassy carbon layers after long stay on ISS. The results were analyzed and the possibilities for various applications on earth – in medicine, ecology, metallurgy, mechanical engineering, chemical industry - were discussed. The study was prepared in relation to a project funded by the Bulgarian National Science Fund, Contract number KII-06-H27/2.

**KEYWORDS: SATELLITE SYSTEMS, SPACE EXPERIMENTS, DC/AC ELECTRIC  
FIELDS, VITREOUS CARBON**

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