



**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION V
New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials
School of Electrical Engineering and Computer Science of Applied Studies**

PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 21st-23rd September 2016.**

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and were chosen as the research objects. Study on the characteristics and structure of sulphate titanium slag, and combine with the traditional features of microwave energy transmission and selective microwave heating, and mechanism research and regulatory mechanism of preparing synthetic rutile under microwave heating were investigated. The titanium dioxide content of 90 % of synthetic rutile was obtained, and the results of analysis indicated that the synthetic rutile products was prepared with Sulphur content of 0.022 %, Carbon content of 0.024% and Phosphorus content of 0.008%, which the parameter of products better than that of natural rutile.

P17

New trends in the development of battery

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Among civilized priorities and challenges for humanity, energy occupies the most important and certainly the most attractive place in terms of research as well as in scientific and technological developments. The question of energy, in relation trinity energy-materials-information (EMI) is directly correlated with the triad of the synthesis (the technological process of obtaining materials)- structure of- material properties (srb. sinteza-struktura-svojstva materijala (SSS)). Storage of energy (electricity, heat, cooling energy ...) is an important issue and a weak point in the energy sector. Fossil fuels provide the internal storage of energy which is not the case for wind, solar, etc. The nanostructure of materials can be a useful for the storage of heat or for the isolation of heat storage. Storing electrochemical energy is widely applied, especially in portable devices, which are mainly related to the battery. Li, as the material is the most used because it is the lightest metal and has a very high energy density. Due to the lack of lithium in the United States, and the world, new research substitute lithium for magnesium ions, for already listed battery system. These studies are done at the Illinois State University, in Chicago. After the commercialization of lithium-ion battery research for the cathode active material concentrates on lithium that contains at the forefront the transition-metal oxides with a 4V class high electromotive force because it can serve as a lithium of carbonic negative electrode. Unfortunately all classes 4V rechargeable cathode: LiCoO_2 , LiNiO_2 , LiMn_2O_4 , have a core problem of costs and environmental impact, because their cathodes include the use of rare metals such as redox center. The problems become more serious, especially for the most expensive LiCoO_2 , with further expansions of the market for electric vehicles, which are expected in the near future.