Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
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

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27. September 2022.

Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
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

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27th September 2022.

Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION X Program and the Book of Abstracts

Publisher:
Serbian Ceramic Society

Editors:
Dr. Nina Obradović
Dr. Lidija Mančić

Technical Editors:
Dr. Suzana Filipović
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović

Printing:
Serbian Ceramic Society, Belgrade, 2022.

Edition:
120 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (10 ; 2022 ; Beograd)
Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application X New Frontiers in Multifunctional Material Science and Processing, Serbia, Belgrade, 26-27. September 2022. ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2022 (Belgrade : Serbian Ceramic Society). - 96 str. : ilustr. ; 30 cm

Tiraž 120.

ISBN 978-86-915627-9-3

а) Керамика -- Апстракти б) Наука о материјалима -- Апстракти в) Наноматеријали -- Апстракти

COBISS.SR-ID 74827529

P37

Preparation of poly(dimethylsiloxane)-based materials for laser-induced graphenization

Milena Rašljić Rafajilović[1], Marija V. Pergal[1], Marko Spasenović[1], Teodora Vićentić[1], Danica Bajuk-Bogdanović[2], Dana Vasiljević-Radović[1]

[1]Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Njegoševa 12, 11000 Belgrade, Serbia
[2]Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, Belgrade, Serbia

Laser induced graphenization (LIG) of polymer materials has recognized as the most promising method for fabrication of flexible electronic devices. Poly(dimethylsiloxane) (PDMS) is suitable elastomeric materials for flexible electronics devices fabrication due to outstanding mechanical and optical properties. Namely, the low carbon content and the lacking aromatic structures in PDMS material limit the graphenization process resulting in limited conduction properties. The aim of this study was the graphenization of PDMS and PDMS-based materials by CO_2 laser radiation. We prepared pure PDMS elastomer, PDMS/ethylene glycol and PDMS/Triton composite materials by using 20 wt. % of ethylene glycol or Triton in PDMS matrix. Indeed, up to now the evidence of graphenization of these PDMS-based materials has never been observed. PDMS elastomer was prepared by hydrosilylation reaction, while composite materials by blending method. The prepared PDMS-based materials were characterized by Fourier-transform infrared spectroscopy (FTIR), atomic force microscopy (AFM) and Raman spectroscopy. The obtained results showed that surfaces of pure PDMS elastomer and PDMS/ethylene glycol composite cannot be graphenized by direct laser writing. However, by adding Triton as aromatic and carbon sources into the PDMS matrix it is possible to improve the graphenization of PDMS based materials and this material is good candidate for fabrication of flexible electrodes.

Acknowledgement: The authors would like to thank the Ministry of Education, Science and Technological Development of the Republic of Serbia (Grant No: 451-03-68/2022-14/200026).