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ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

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ΑΝΑΚΟΙΝΩΣΗ

ΠΑΡΟΥΣΙΑΣΗ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

Τίτλος

«*Synthesis and characterization of a single ion solid polyelectrolyte*»

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Η παρουσίαση θα πραγματοποιηθεί με τηλεδιάσκεψη σύμφωνα με το τρίτο άρθρο, παρ. 1, της με αριθμ. 115744/Z1/4.9.2020 Κοινής Υπουργικής Απόφασης (Β΄3707).

Περίληψη:

Solid electrolytes have recently attracted significant attention for use in energy-related applications, primarily due to their safety in comparison with their liquid analogues. Devices based on solid polyelectrolytes are being proposed for a variety of applications which increases constantly their demand. Therefore, the development of highly efficient, safe and long-lasting solid polyelectrolytes is among the greatest challenges in modern electrochemistry.
The aim of this work is to develop a single ion solid polyelectrolyte via a facile and cost-effective synthetic approach and to study its electrochemical properties. Towards this direction, *tert*-butyl methacrylate (*t*-BuMA)-based homopolymer microgels, stabilized with poly(ethylene glycol) methacrylate (PEGMA) chains were synthesized by emulsion free-radical polymerization. Next, the *t*-BuMA ester groups were hydrolyzed to obtain poly(methacrylic acid) (PMAA) microgels. Finally, lithium cations were introduced within the microgel in the form of lithium carboxylate salts via neutralization of sodium methacrylate with lithium methoxide, resulting in the synthesis of a solid polyelectrolyte. The ionic microgels were characterized in terms of their morphology and structure by scanning electron microscopy, dynamic light scattering and Fourier transform infrared spectroscopy. The ionic conductivity of the solid polyelectrolyte was measured by electrochemical impedance spectroscopy.