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### New polymer electrolytes for Li-batteries

In recent years, research efforts have been focused on development of solid polymer electrolytes with the goal to enhance the intrinsic safety and to replace flammable liquid electrolytes in Li batteries. However, application of this technology is still limited due to the insufficient ionic conductivity of the known polymers or by low tensile properties of gel electrolytes. The alternative approach is to incorporate covalently lithium salt moieties into the main polymer chain and to create the so-called single-ion conducting polymers (SICs). These all-in-one solid electrolytes are formed by a main polymer chain carrying anionic functional groups and lithium ions as the mobile counterpart. The rational design of SICs emerges as a primary strategy for enhancing the performance of lithium ion batteries. In this work, two methods were proposed for obtaining SIC with high ionic conductivity. In the first case, ion-conducting random copolymers were obtained using free radical polymerization of methacrylate-ionic monomers with a lithium cation (Li-monomers) with poly (ethylene glycol) methyl methacrylate ether. The second approach consisted in sequential RAFT-polymerization of Li-monomers and non-ionic monomers to produce block copolymers.

### Biography

Ponkratov Denis Olegovich has completed his PhD from AN Nesmeyanov Institute of Organoelement Compounds of Russian Academy of Sciences (INEOS RAS) and continues to work in the laboratory of High-Molecular Compounds in the field of Polymeric Ionic Liquids.

Mattur@mail.ru



### Ponkratov Denis Olegovich

AN Nesmeyanov Institute of  
Organoelement Compounds,  
Russian  
Academy of Sciences, Russia

Co-Authors

**Elena I Lozinskaya<sup>1</sup>,  
Nina M Kabaeva<sup>1</sup>, Alexander S  
Shaplov<sup>1, 2</sup>, Luka Porcarelli<sup>3</sup>, Claudio  
Gerbaldi<sup>3</sup> and Yakov S Vygodskii<sup>1</sup>**

<sup>1</sup>AN Nesmeyanov Institute of  
Organoelement Compounds,  
Russian

Academy of Sciences, Russia

<sup>2</sup>Luxembourg Institute of Science and  
Technology (LIST), Italy