

Accepted Manuscript

Design of ionic liquid like monomers towards easy-accessible single-ion conducting polymer electrolytes

Luca Porcarelli, Petr S. Vlasov, Denis O. Ponkratov, Elena I. Lozinskaya, Dmitrii Y. Antonov, Jijeesh R. Nair, Claudio Gerbaldi, David Mecerreyes, Alexander S. Shaplov

PII: S0014-3057(18)31024-3
DOI: <https://doi.org/10.1016/j.eurpolymj.2018.08.014>
Reference: EPJ 8527

To appear in: *European Polymer Journal*

Received Date: 3 June 2018
Revised Date: 3 August 2018
Accepted Date: 6 August 2018

Please cite this article as: Porcarelli, L., Vlasov, P.S., Ponkratov, D.O., Lozinskaya, E.I., Antonov, D.Y., Nair, J.R., Gerbaldi, C., Mecerreyes, D., Shaplov, A.S., Design of ionic liquid like monomers towards easy-accessible single-ion conducting polymer electrolytes, *European Polymer Journal* (2018), doi: <https://doi.org/10.1016/j.eurpolymj.2018.08.014>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Design of ionic liquid like monomers towards easy-accessible single-ion conducting polymer electrolytes

Luca Porcarelli^{a,b,*}, Petr S. Vlasov^c, Denis O. Ponkratov^d, Elena I. Lozinskaya^d, Dmitrii Y. Antonov^d, Jijeesh R. Nair^{b,e}, Claudio Gerbaldi^b, David Mecerreyes^a and Alexander S. Shaplov^{d,f,*}

^a*POLYMAT, University of the Basque Country UPV/EHU, Joxe Mari Korta Center, Avda.*

Tolosa 72, 20018 Donostia-San Sebastian, Spain

^b*GAME Lab, Department of Applied Science and Technology (DISAT), Politecnico di Torino,*

Corso Duca degli Abruzzi 24, 10129, Torino, Italy

^c*Department of Macromolecular Chemistry, Saint-Petersburg State University, Universitetsky*

pr. 26, Saint-Petersburg, 198504, Russia

^d*A.N. Nesmeyanov Institute of Organoelement Compounds Russian Academy of Sciences*

(INEOS RAS), Vavilov str. 28, 119991 Moscow, Russia

^e*present address: Helmholtz-Institute Münster (HI MS) IEK-12: Ionics in Energy Storage,*

Corrensstraße 46, 48149 Münster, Germany

^f*Luxembourg Institute of Science and Technology (LIST), 5 avenue des Hauts-Fourneaux, L-*

4362 Esch-sur-Alzette, Luxembourg

*Corresponding authors: luca_porcarelli001@ehu.es, alexander.shaplov@list.lu

ABSTRACT: The rational design of single-ion polymer electrolytes emerges as a primary strategy for enhancing the performance of lithium ion batteries. With the aim to increase ionic conductivity, four novel ionic liquid monomers were designed and synthesized in high purity. Such monomers differ from the previously reported systems by (1) the presence of a long and flexible spacer between the methacrylate group and chemically bonded anion or (2) by a long perfluorinated side chain. The investigation of their free radical copolymerization with poly(ethylene glycol) methyl ether methacrylate (PEGM) allowed to identify the impact of their copolymer composition on thermal and ion conducting properties. The copolymer based on lithium 3-[4-(2-

Download English Version:

<https://daneshyari.com/en/article/7803356>

Download Persian Version:

<https://daneshyari.com/article/7803356>

[Daneshyari.com](https://daneshyari.com)