Full Paper _____ *Thematic Section:* Physicochemical Research.
Registration Code of Publication: 13-33-2-68 *Subsection:* Polymer Chemistry.
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Contributed: February 18, 2013.

The study of the rheological properties of epoxy oligomers in a wide temperature range

© **Rustem R. Amirov**,[1]* **Kristina A. Andrianova**,[2] **Ruslan R. Khassanov**,[2]
Anna A. Petrova,[2] **Lilia M. Amirova**,[2] **Marat A. Ziganshin**,[1] and **Alexander V. Gerasimov**[1+]
[1] *A.M. Butlerov Chemistry Institute. Kazan Federal University. Kremlevskaya St., 18. Kazan, 420008. Tatarstan Republic. Russia. Phone: +7 (843) 233-71-45. Fax: +7 (843) 233-74-16. E-mail: Alexander.Gerasimov@kpfu.ru*
[2] *Department of Flying Vehicles Manufacturing of IANTE. A.N. Tupolev Kazan National Research Technical University. Tolstoy St., 15. Kazan, 420012. Tatarstan Republic. Russia. Phone: +7 (843) 236-64-94.*

*Supervising author; [+]Corresponding author

Keywords: *epoxy oligomer, dianic resins, novolac resins, viscous flow, rheology, activation energy, glass transition temperature, differential scanning calorimetry.*

Abstract

The glass transition temperature by range of dianic and novolac epoxy oligomers using differential scanning calorimetry was determined and its rheological properties were studied. The activation energy of viscous flow (E_η) for all studied epoxy oligomers was shown to be temperature-dependent in wide temperature range. In the low-temperature region the $(E_\eta)_1$ values for all oligomers are within 200-230 kJ/mol, whereas at high temperatures, the$(E_\eta)_2$ values depend on the average molecular weight of the oligomer, and for the studied compounds in the range of 17-46 kJ/mol.