Full Paper _____ *Thematic Section:* Photochemistry.
Registration Code of Publication: 11-25-5-96 *Subsection:* Organic Chemistry.
Publication is available for discussion in the Internet as a material of "All-Russian Working Chemical Conference "*Butlerov's Heritage-2011*". http://butlerov.com/bh-2011/
Contributed to editorial board: April 21, 2011

Peculiarities of the thermal chemiluminescence of 2,2'-azobisisobutyronitrile

© **Timur L. Veprintsev**, **Vladimir V. Naumov**, and **Alexey V. Trofimov**[+]*
Emanuel Institute of Biochemical Physics. Russian Academy of Sciences. Kosygina St., 4. Moscow, 119334. Russia. Phone: +7 (495) 939-73-58. E-mail: avt_2003@mail.ru

*Supervising author; [+]Corresponding author

Keywords: *azobisisobutyronitrile, chemiluminescence, oxidation, hydroperoxide, mathematical modeling.*

Abstract

In the course of thermal oxidation of azobisisobutyronitrile in benzene and chlorobenzene, measured were the rate of the oxygen consumption and the chemiluminescence intensity. The acquired data have been rationalized with the help of computer modeling of the kinetics of free-radical reactions involved in the chemiluminescence process discussed herein. The possibility of involvement of the solvent molecules into the oxidation process has been demonstrated. The presence of hydroperoxides may account for the initial peak of the chemiluminescence intensity. The scheme of the elementary reactions involved in the mechanism of the observed chemiluminescence is substantiated.