

Professor Gennady Efremovich Zaikov: More Than Half a Century in Science

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Professor Gennady Efremovich Zaikov will have his 75th birthday on January 7, 2010, which will represent more than 50 years of a brilliant scientific activity. G. Zaikov was born in Omsk, Siberia (U.S.S.R.), where he graduated from the local primary, middle, and high schools. He also graduated from a musical professional school where he studied violin and pianoforte. However, his parents Efrem and Matrena decided that it might be better for their son to continue his education by following in the footsteps of his mother - a chemistry teacher in High School and Omsk's Medical Institute (his father was a mathematician and land-surveyor). Therefore, in 1952 Gennady moved to Moscow where he entered the Moscow State University (MSU), and graduated in chemistry degree in December 1957. His bachelor's degree dealt with the problem of separating Li6 and Li7 isotopes.

After this, he joined the Institute of Chemical Physics (ICP) in Moscow in February 1958. In 1996 this Institute was split into two parts: N. N. Semenov Institute of Chemical Physics (ICP) and N. M. Emanuel Institute of Biochemical Physics. Currently, Prof. G. E. Zaikov is working at the N. M. Emanuel Institute

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of Biochemical Physics (IBP). So, G.E. Zaikov never changed the place of his job.

G. Zaikov was originally invited to ICP by Professor Nikolai Markovich Emanuel. Under his guidance, G. E. Zaikov defended in 1963 his Ph.D. thesis entitled “Comparison of the Kinetics and Mechanism of Oxidation of the Organic Compounds in Gaseous and Liquid Phases”. The results attained were the foundation of an industrial application. A plant floor in Moscow petrochemical plant (Kapotnya district) was built for the production of 10 000 tons/year of acetic acid and 5 000 tons/year of methylethylketone, by oxidation of n-butane in liquid phase in critical conditions (50 atm, 150 °C). The main contributors for this plant floor were N.M. Emanuel, E.A. Blumberg, Z.K. Maizus, M.G. Bulygin, E.B. Chizhov and G.E. Zaikov. In 1968, Zaikov defended a Doctor of Science thesis entitled “The Role of Media in Radical-Chain Oxidation Reactions”. In 1970 he became a full professor.

In 1966, Gennady became involved with polymer science. N. M. Emanuel entrusted Zaikov with the organization of work on problems associated with aging and stabilization of polymers, and, later, with the combustion of polymeric materials. In the 1970s there were about 1 000 scientists (about 50 research centers) in the U.S.S.R. working on these problems, including 200 scientists from ICP under Zaikov’s leadership. The research was conducted on all aspects of these polymer problems: thermal degradation, oxidation, ozonolysis, photodegradation and radiation degradation, hydrolysis, biodegradation, mechanical degradation, pyrolysis, and flammability. Scientists from synthetic laboratories of this division (Prof. V.V. Ershov, E.G. Rozantsev, K.M. Dyumaev) prepared several very important and original stabilizers for polymers and organized the production of these stabilizers.

After “perestroika and degradation” of the U.S.S.R. in 1991, the new Russian government decreased the financial support of science significantly. So, G. E. Zaikov has now with him in the N. M. Emanuel Institute only 15 co-workers (instead of 200 in 1970–1980s).

He compensated the decreasing of scientists in his Institute by increasing the cooperation with other research centers in Russia and abroad.

Nowadays, G.E.Zaikov has active scientific cooperation (publication of original papers, reviews, books and volumes) with 20 research abroad centers (e.g., U.S.A., U.K., Spain, Portugal, Italy, Poland, Germany, South Africa, etc.), 8 centers in CIS – cooperation and 20 – inside of Russia.

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Zaikov left his position as a head of laboratory in September 2007, and became a head of Polymer Division (PD) in IBP.

G. E. Zaikov is an outstanding scientist with expertise in wide areas of chemistry: chemical and biological kinetics, chemistry and physics of polymers, history of chemistry and biochemistry. In addition to his position at the N. M. Emanuel Institute, he is a lecturer at the Moscow State Academy of Fine Chemical Technology and he is a researcher at Volzhsk Branch of Volgograd State

Technological University. He taught his students using his own books: Degradation and Stabilization of Polymers, Physical Methods in Chemistry, and Acid Rains and Environmental Problems. G. E. Zaikov has written about 2500 original scientific papers, 230 monographs (30 in Russian and 200 in English), and 270 chapters in 60 volumes. It is evident that he has made valuable contributions to the theory and practice of polymers-aging and development of new stabilizers for polymers, organization of their industrial production, life-time predictions for use and storage, and the mechanisms of oxidation, ozonolysis, hydrolysis, biodegradation, and decreasing of polymer flammability. New methods of polymer modification using the processes of degradation were introduced into practice by Zaikov. These methods allow the production of new polymeric materials with improved properties. Most recently, he has also been very active in the field of semiconductors and electroconductive polymers, polymer blends, and polymer composites including nanocomposites.

G. E. Zaikov is a member of many editorial boards of journals published in Russia, Poland, Bulgaria, the U.S.A. and U.K.

He is a member of Academy of Creation (San Diego, USA – Moscow, Russia), International Academy of Sciences (Munich, Germany), American Chemical Society, Plastic Engineering Society (USA) and Royal Chemical Society (UK).

Approaching his 75th birthday, G. E. Zaikov is in the prime of his life. Although support for scientists and research is now at a low point for many in Russia, he is hopeful that, for the sake of his country and its future, this will improve (probably in the far future).

The practice of good science still exists in Russia and G. E. Zaikov has been and is a significant contributor. We wish him a most happy birthday.