

IGOR' IOGANNOVICH GRANDBERG
(ON THE OCCASION OF HIS
SEVENTIETH BIRTHDAY)

V. N. Knyazev and N. M. Przheval'skii



Igor' Iogannovich Grandberg was born on February 19, 1930 in Moscow. In 1948, he entered the Chemistry Faculty of Moscow State University, where he graduated with distinction in 1953. Less than three years later, he wrote and defended his Chemical Sciences Candidate's Dissertation on "Some Reactions of Azines" under the direction of Prof. A. N. Kost (1956). His interest in heterocyclic chemistry developed at this time. After six more years, he brilliantly defended his Chemical Sciences Doctoral Dissertation on "Research on Pyrazoles." The results of this work made a new fundamental contribution to the chemistry of nitrogen-containing heterocycles (see: A. N. Kost and I. I. Grandberg, "Progress in Pyrazole Chemistry" in: *Advances in Heterocyclic Chemistry*, Vol. 6 (1966), p. 347). In 1965, Grandberg was invited to head the Department of Organic Chemistry at the K. A. Timiryazev Moscow Agricultural Academy, which he directed continuously for 30 years. Since 1995, he has been a professor in this department.

Prof. Grandberg's work has held fundamental significance in a number of areas of heterocyclic chemistry. He has systematically studied the correlation between electronic structure, conjugation, and reactivity of molecules containing two heteroaromatic rings. At the Department of Organic Chemistry of the Timiryazev Moscow Agricultural Institute, Prof. Grandberg discovered a new reaction, which yields important biologically active indoles, namely, tryptamines, in a single step (see: I. I. Grandberg, T. I. Zuyanova, N. I. Afonina, and T. A. Ivanova, "New method for the synthesis of biogenic amines", *Dokl. Akad. Nauk SSSR*, **176**, 583 (1967)). This reaction served as the basis for methods of synthesis of tryptofols, thiotryptofols, their analogs, eserines, homoerines, and β -carbolines, which are indole compounds containing a tryptamine fragment

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(see: I. I. Grandberg, "Tryptamines and related structures from γ - and δ -halocarbonyl compounds and arylhydrazines", *Zh. Org. Khim.*, **19**, 2439 (1983)). Recently, a proposal has been made to name this method for the synthesis of tryptamines as the Grandberg reaction. In a study of the mechanism of this reaction, Prof. Grandberg has proposed that the key step in the Fischer indole synthesis involves a concerted acid-catalyzed [3,3]-sigmatropic shift (see: I. I. Grandberg, "Indoles XXXVIII. Fischer indole synthesis and several related reactions as sigmatropic rearrangements, *Izv. Timiryazev. Sel'sk.-Khozyaistv. Akad.*, No. 5, 188 (1972)). This proposal later found experimental confirmation and proved extremely useful for predicting and carrying out new rearrangements and explaining the mechanisms of several known reactions (see: I. I. Grandberg and V. I. Sorokin, "Asymmetrical ketones in the Fischer reaction and cyclization of O-phenyloximes", *Usp. Khim.*, No. 2, 266 (1974); N. M. Przheval'skii, L. Yu. Kostromina, and I. I. Grandberg, "New data on the mechanism of the Fischer indole synthesis", *Khim. Geterotsikl. Soedin.*, No. 7, 867 (1988); N. M. Przheval'skii and I. I. Grandberg, "Cope aza-rearrangement in organic synthesis", *Usp. Khim.*, No. 5, 814 (1987)).

In the past decade, Prof. Grandberg turned his attention to the theoretical and applied aspects of the chemistry of 7-aminocoumarins, which are efficient media for laser technology and, certainly, the development of new pathways for the synthesis of derivatives of indoles and other heterocyclic compounds (see: S. K. Gorozhankin, M. A. Kirpichenok, and I. I. Grandberg, "Synthesis of 4-alkyl-7-functionally-substituted dialkylaminocoumarins, *Khim. Geterotsikl. Soedin.*, No. 10, 1326 (1990); G. P. Tokmakov and I. I. Grandberg, "Rearrangement of 1-arylindoles to 5H-dibenz[*h,f*]azepines", *Tetrahedron*, **5**, No. 7, 2091 (1990)).

Prof. Grandberg has published about 500 scientific papers and obtained more than 50 Inventor's Certificates. At the Timiryazev Moscow Agricultural Academy, more than 40 Chemical Sciences Candidate's Dissertations and four Chemical Sciences Doctoral Dissertations were prepared and defended at the Department of Organic Chemistry under his direction. Many of his students now lead scientific teams, laboratories, and firms. The students of several generations and agricultural science and biology teachers are grateful to Prof. Grandberg for his outstanding organic chemistry textbook and laboratory workbook, which have been published in three editions and have been extremely popular.

Over the years, Prof. Grandberg has been a member of the editorial boards of Mir Press, *Zhurnal Organicheskoi Khimii* (Journal of Organic Chemistry), and *Izvestiya Timiryazevskoi Sel'skokhozyaistvennoi Akademii* (Proceedings of the Timiryazev Agricultural Academy).

The editorial board of *Khimiya Geterotsiklicheskikh Soedinenii* (Chemistry of Heterocyclic Compounds) heartily congratulate Prof. Grandberg and wish him health and further success in his scientific work.