

Information

Congresses, Conferences, Symposia, Workshops, and Seminars in the Field of Chemical Sciences Held with Participation of the Russian Academy of Sciences

XI International Conference on the Chemistry of Phosphorus Compounds (ICPC-XI)*

XI International Conference on the Chemistry of Phosphorus Compounds was held on September 8–13, 1996 in Kazan' (Republic Tatarstan). The Conference was organized by the A. E. Arbuzov Institute of Organic and Physical Chemistry (IOPC) of the Kazan' Scientific Center, Kazan' State University, Kazan' State Technological University, and the Scientific Council on the Organoelement Chemistry of the RAS. The Conference was mostly sponsored by the Non-budget Republican Foundation for Scientific Research and Design Works, the Russian Foundation for Basic Research, Monsanto (USA) and B. V. Enraf-Nonius Delft companies, and Abak joint-stock society.

The Conference was attended by more than 150 specialists from leading scientific centers in Russia (Cheboksary, Irkutsk, Kazan', Moscow, Novosibirsk, St. Petersburg, Vladivostok, etc.) and 40 scientists from other countries including China, Denmark, France, Germany, Great Britain, Japan, the Netherlands, Poland, Romania, Switzerland, Ukraine, and the USA. Altogether 58 reports and about 200 posters were presented. The subject of the Conference was rather broad and covered problems of synthesis, structure, and reactivity of organic derivatives of phosphorus as well as their biological activity and practical application.

At the opening of the Conference, vice-premier of the Republic Tatarstan *I. Khairullin* addressed the par-

ticipants on behalf of the President of Tatarstan *M. Shaimiev*. He informed on the establishment of an International Prize named after A. E. Arbuzov, which will be awarded in the field of chemistry of organophosphorus compounds every three years. It is planned to award this prize for the first time in 1997 when the 120th anniversary of the outstanding scientist will be celebrated.

Many reports delivered at the Conference were devoted to the theoretical problems of the chemistry of organophosphorus derivatives, to the use of physico-chemical methods for determination of the structures of organophosphorus compounds, and to the study of dynamic processes. Interesting data concerning the problem of diastereomeric transformations of fluorine-containing chlorophosphonates in liquid and solid phases were presented in the report by Academician *M. I. Kabachnik* (A. N. Nesmeyanov Institute of Organoelement Compounds of the RAS, Moscow, Russia). Novel steric and inductive models for the analysis of organophosphorus and other heteroorganic compounds were discussed in the report by *V. I. Galkin* (Kazan' State University, Russia). The report by *G. Schiemens* (Institute of Organic Chemistry, Kiel, Germany) dealt with hypervalence of the phosphorus atoms in some types of polyfunctional phosphines, which is due to intramolecular donor-acceptor interactions. A new type of ring-chain anionotropic tautomerism in the series of haloalkyl diphenylphosphine sulfides was discussed in the report by *T. A. Mastryukova* (A. N. Nesmeyanov Institute of Organoelement Compounds of the RAS,

* Based on the materials kindly provided by *O. G. Sinyashin* and *M. A. Pudovik*.

Moscow, Russia). *H. Hadson* (London University, Great Britain) demonstrated new potentialities of mass spectrometry in the investigation of organic derivatives of phosphorus.

A separate session was devoted to **the chemistry of supramolecular and macrocyclic compounds**. Various aspects of the synthesis, spatial and electronic structures, and chemical properties of phosphorylated calyxarenes were considered in the reports by *L. N. Markovskii* (Institute of Organic Chemistry, Kiev, Ukraine), *R. Schmutzer* (Institute of Inorganic and Analytical Chemistry, Braunschweig, Germany), *E. V. Kazakova* (IOPC, Kazan', Russia), and *J. Glode* (Institute of Applied Chemistry, Berlin, Germany). In her report, *A.-M. Caminade* (Laboratory of Coordination Chemistry of the Center of National Scientific Research, Toulouse, France) discussed a new type of rigid-structure macrocyclic compounds, phosphorus-containing dendrimers. Considerable interest was aroused in the participants by the report by *V. I. Sokolov* (Institute of Organoelement Compounds of the RAS, Moscow, Russia) dealing with the reactions of phosphoryl radicals with fullerenes C_{60} and C_{70} . *E. E. Nifant'ev* (Moscow State Pedagogical University, Russia) reported on the preparation of new metal- and phosphorus-containing macrocyclic derivatives using complex-formation between cyclic diphosphites and platinum(II) salts.

Particular interest in the researchers was aroused by reports dealing with **the chemistry of derivatives of acids of trivalent phosphorus**. *M. A. Pudovik* (IOPC, Kazan', Russia) demonstrated vast possibilities of the synthesis of linear and cyclic, saturated and unsaturated sulfur- and silicon-containing derivatives of trivalent phosphorus based on α -mercaptocarbonyl compounds. The report by *B. I. Martynov* (State Scientific Research Institute of Organic Chemistry and Technology, Moscow, Russia) was devoted to unusual chemical transformations of trivalent phosphorus derivatives in their reactions with fluorinated alkenes. Broad synthetic potentialities of 1,3,2-dioxaphosphorin-4-ones for the preparation of linear and cyclic organophosphorus compounds were discussed in the report by *V. N. Mironov* (IOPC, Kazan', Russia). The results of the successful use of trivalent phosphorus derivatives for phosphorylation of compounds with spatially oriented hydroxyl groups were reported by *M. K. Grachev* (Moscow State Pedagogical University, Russia). *G. N. Nikonov* (IOPC, Kazan', Russia) showed that the combination of trivalent phosphorus and boron in molecules of organophosphorus derivatives creates qualitatively new properties of these compounds. The report by *Sh. Yasui* (Technical College, Nara, Japan) was devoted to photoreactions of trivalent phosphorus derivatives with ruthenium complexes and to the study of ligand exchange and single-electron transfer accompanying these transformations.

Phosphorus derivatives with low coordination numbers were considered in reports by *F. Bickelhaup* (Amsterdam University, the Netherlands), *N. V. Lukashov*

(M. V. Lomonosov Moscow State University, Russia), and *T. Makevitz* (University of Kaiserslautern, Germany).

Some of the reports were devoted to **the use of organophosphorus compounds in organic synthesis**. *S. Evans* (South Carolina State University, USA) considered broad potentialities of spiroxyphosphoranyl-C-anions in the stereoselective syntheses of olefins. *R. Itken* (University of St. Andrews, Great Britain) reported on the successful use of adducts of carbon disulfide with phosphines for the preparation of 1,3-dithiolane and tetrathiafulvalene and their derivatives. *M. Miko-laichik* and *A. Skovronskaya* (Center of Molecular and Macromolecular Research, Lodz, Poland) discussed problems of the synthesis of cyclopentanediones and prostaglandines by virtue of C-anions derived from phosphonates and cyclic enones based on thio- and selenophosphates.

Much attention in the program of the Conference was paid to **the chemistry of phosphorus derivatives containing P—C bonds**, which are the most promising biologically active compounds. The progress in the synthesis of phosphacyclanes with endocyclic P—C bonds containing other elements (O, N, S, Se, and B) was surveyed in the report by *A. V. Konovalov* (IOPC, Kazan', Russia). Similar problem, i.e., design of ring systems containing P—C bonds using other methods was discussed in the report by *Ch. Yuan* (Institute of Organic Chemistry, Shanghai, China). New possibilities for the preparation of linear and cyclic organophosphorus compounds incorporating a P—C fragment using C-phosphorylation of hydrazones, formamidines, and nitrogen-containing unsaturated heterocyclic compounds with trivalent phosphorus halides were considered in the reports by *A. M. Pinchuk* and *A. A. Tolmachev* (Institute of Organic Chemistry, Kiev, Ukraine). *J. Heinike* (Institute of Inorganic Chemistry, Greifswald, Germany) reported on the use of *o*-phosphinophenols for the synthesis of phosphacyclanes containing P—C, P=C, P=P, and P—Si bonds as well as metal complexes based on them. Methods for the preparation of saturated and unsaturated polyheterophospholanes containing a P—C bond were considered in the report by *R. Kh. Kamalov* (IOPC, Kazan', Russia). *S. Moasson* (University of Caen, France) demonstrated the possibility of preparing polyfunctional compounds containing a P—C bond *via* sigmatropic rearrangements of carbanions or ylides. *D. Griffiths* (Colchester University, Great Britain) reported on the synthesis of various compounds with P—C bonds using the reactions of benzoylphosphonates with trialkyl phosphites, and *J. Tebbi* (University of Staffordshire, Great Britain) presented the results of a study of solvation and conformational analysis of 2-hydroxyalkyl-phosphonates.

Much attention was paid to the **synthesis of biologically active organophosphorus derivatives**. A report on advances in the chemistry of diphosphonates and their use in medicine was delivered by *J. Amburgei* (Procter & Gamble, Cincinnati, USA). *L. Meier* (Ciba-Geigy, Basel,

Switzerland) presented a report dealing with the progress in the chemistry of Glyphosate, the most promising and efficient phosphorus-containing herbicide. The report by *K. A. Anikienko* (State Scientific Research Institute of Organic Chemistry and Technology, Moscow, Russia) was devoted to new types of choline esterase inhibitors in the series of functionally substituted phosphonates. *Ya. Mikhalsky* (Center of Molecular and Macromolecu-

lar Research, Lodz, Poland) considered new methods for the synthesis of fluorophosphates and fluorophosphonates exhibiting specific biological activities.

The Conference provided the participants with the opportunity to get acquainted with the most recent achievements in the chemistry of phosphorus and to establish new scientific contacts.

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International Conference on Analytical Chemistry

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June 15–21, 1997.

II International Conference on Mechanochemistry and Mechanical Activation

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August 12–16, 1997.