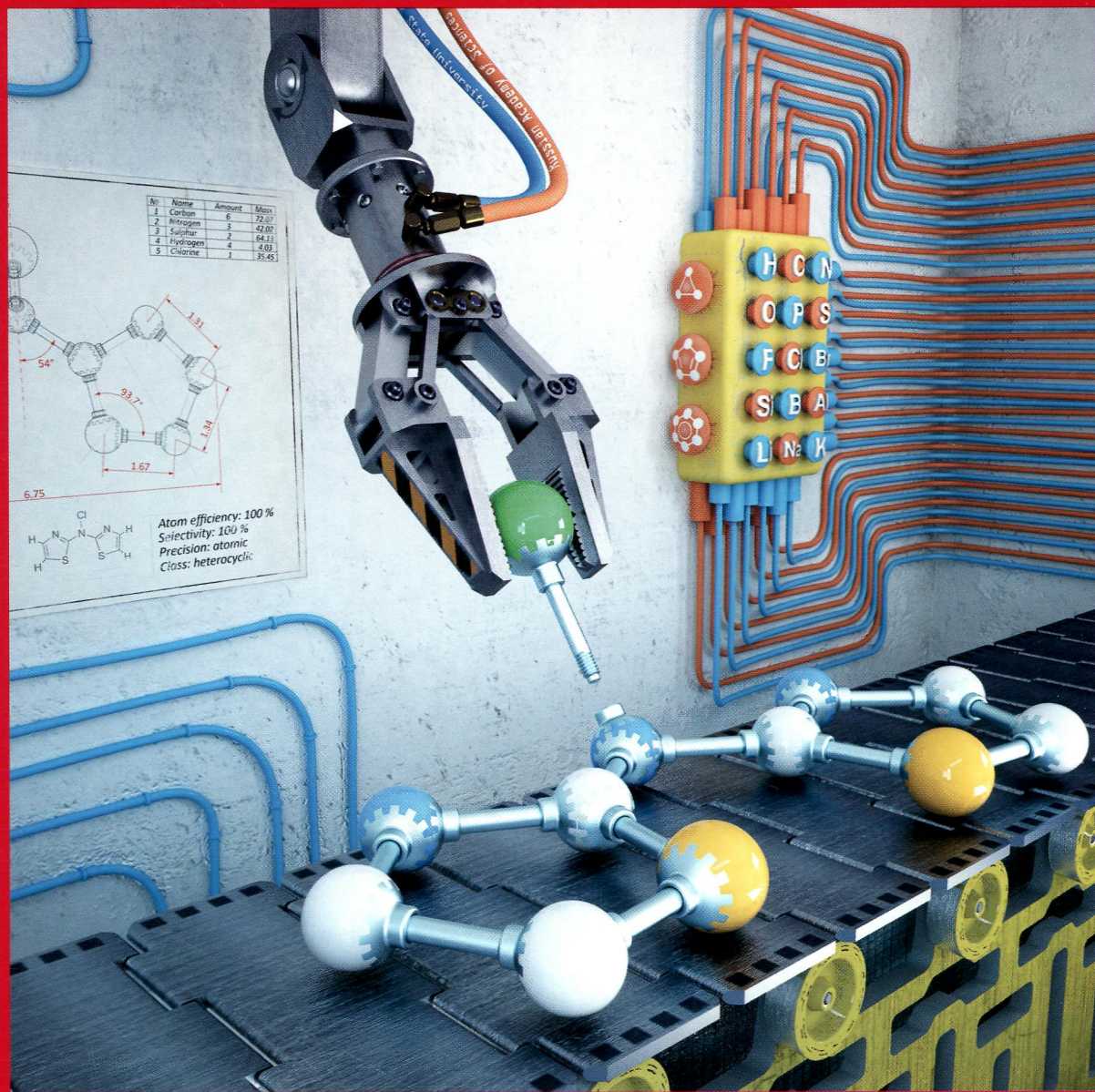


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Развитие методологии современного селективного органического синтеза: получение функционализированных молекул с атомарной точностью

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### Modern organic synthesis

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Grand challenges of modern society and increasing demand in development of high technology sectors of industrial production prompt for emergence of new generation of synthetic methods. Cutting edge of the synthetic methods is introduction of functional groups and more complex structural units into organic molecules with unprecedented control over the course of chemical transformation. State-of-the-art of organic synthesis facilitates appearance of new direction in the chemical science — preparation of organic molecules, biologically active compounds, pharmaceutical substances and smart materials with absolute selectivity. Most advanced technologies anticipated in the near future unveil novel tendency that we define as 'atomic precision' in performing chemical reactions. In the present review we discuss selective methods of organic synthesis eligible for transformations of complex functionalized molecules under mild conditions. Selected key tendencies in current organic synthesis are briefly considered including preparation of organofluorine compounds, catalytic cross-coupling and oxidative cross-coupling reactions, atom-economic addition reactions, metathesis processes, oxidation and reduction reactions, synthesis of heterocyclic compounds, design of new homogeneous and heterogeneous catalytic systems, application of photocatalysis, scaling of synthetic procedures to industrial level and development of new approaches to investigate mechanisms of catalytic reactions. Bibliography — 840 references.