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# Russian Chemical Reviews

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**New achievements in the chemistry of N-acyliminium ions and their use in stereoselective organic synthesis** 1

M.G.Vinogradov, O.V.Turova, S.G.Zlotin

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The review summarizes data published in the last decade on the reactions of organic compounds involving N-acyliminium ions, including intramolecular arylation (cyclization), cross-coupling with nucleophiles and some other transformations giving rise to new carbon–carbon and carbon–heteroatom bonds. The stereo- and enantioselective versions of these reactions using chiral ancillary groups and asymmetric catalysts (organocatalysts) are considered. Examples of application of N-acyliminium ions for the synthesis of natural compounds and their analogues are given.

Bibliography — 100 references.

**Nitrosonium cation in chemical and biochemical reactions: achievements and prospects** 18

G.I.Borodkin, V.G.Shubin

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Data on the reactivity of nitrosonium cation in chemical reactions are systematized and generalized. The structural diversity of nitrosonium complexes resulting from specific electronic structure of  $\text{NO}^+$  cation is demonstrated. The use of nitrosonium salts in the synthesis of heterocyclic compounds and in the preparation of modern materials, including nanomaterials, is considered. The participation of  $\text{NO}^+$  cation in oxidative, catalytic and biochemical processes is discussed.

Bibliography — 332 references.

## **Kinetic features and industrial prospects of the selective oxidative cracking of light alkanes**

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V.S.Arutyunov,<sup>a, b</sup> V.I.Savchenko,<sup>a</sup> I.V.Sedov,<sup>a</sup> A.V.Nikitin,<sup>a, b</sup> R.N.Magomedov,<sup>b</sup>  
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The results of investigations of the kinetic features of the selective oxidative cracking of light alkanes are analyzed and integrated. This process attracts researchers' attention in relation to the possible design of new industrial processes based on light hydrocarbon feed. Particular attention is paid to ethane for which comprehensive and adequate models of oxidative conversion suitable for detailed analysis of the process kinetics have already been developed. The prospects for the practical application of methane homologues present in natural and associated gases in the selective oxidation cracking are discussed.

Bibliography — 85 references.

## **Reactions of nitrogen-containing acetals with aromatic nucleophiles**

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A.S.Gazizov, A.R.Burilov, M.A.Pudovik, O.G.Sinyashin

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The data on the reactions of nitrogen-containing acetals with carbocyclic and heterocyclic aromatic nucleophiles published in the last decade are integrated and described systematically. It is shown that intermolecular reactions of this type result in diarylmethane derivatives or heterocyclic compounds, tryptamines and isoquinolines, as well as aryl-substituted imidazolidin-2-ones and 2-arylpiperidines. The intramolecular processes involving aromatic nucleophiles present in the acetal molecule are considered. The transformations are classified in terms of the products formed.

Bibliography — 156 references.