

PR-123

**MECHANOCHEMICAL POLYMERIZATION IN THE SYNTHETIC DESIGN OF
POLYUREAS SERVING AS COLORIMETRIC
AND FLUORESCENCE CHEMOSENSORS**

**Wahab K. Ahmed,^{1,2} Platonov V. A.,¹ Kovalev I. S.,¹ Kopchuk D. S.,^{1,3} Zyryanov G. V.,^{1,3}
Chupakhin O. N.,^{1,3} Charushin V. N.^{1,3}**

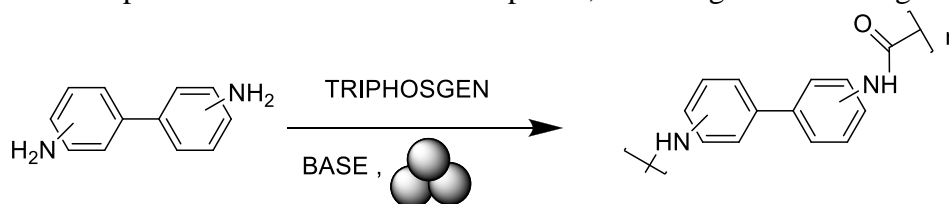
¹*Department of Organic and Biomolecular Chemistry, Chemical Engineering, Ural Federal University,
Yekaterinburg, 620002, Russia*

²*Energy and Renewable Energies Technology Center, University of Technology, Baghdad, Iraq*

³*I. Ya. Postovsky Institute of Organic Synthesis, Ural Division of Russian Academy of Sciences,
22 S. Kovalevskoy St., 620219, Yekaterinburg, Russian Federation*

Abstract. Synthetic polymeric ureas (SPU) are found wide applications in molecular recognition of various analytes in organic and water media. This creates possibility to use polyureas in many applications including environmental and biological [1]. For instance detection/extraction of some anionic species, such as drugs, dyes, surfactant, which greatly affects human health, in water-based media might be promising tool for reusing technical/drinking water resources, reducing industrial wastes generation and, thus, reducing total environmental impact from industrial and civil human activities.

We have synthesized several SPUs by reacting aromatic diamines with triphosgene in solvent-free ball milling conditions (Scheme1). The thus obtained polymers were found to possess high molecular weight and solubility in many common solvents. The structural of (SPU) was confirmed by NMR analysis. The obtained SPUs were capable to detect some anionic species, including common drugs.



Scheme 1. Synthesis polyureas in ball milling

References

1. Whitney S. Y. Ong, Ronald A. Smaldone, Sheel C. Dodani, A neutral porous organic polymer host for the recognition of anionic dyes in water, *Chem. Sci.*, 2020,11, 7716.

This work was supported by Grants Council of the President of the Russian Federation (no. NSh-2700.2020.3)