SYNTHESIS OF FUNCTIONAL SILICONE CONTAINING MONOMERS AND POLYMERS WITH 1,2,3-TRIAZOLE FRAGMENT

Milenin S.A., Bezlepkina K.A., Ardabevskaia S.N., Klokova K.S., Ryzhkov A.I., Migulin D.A., Drozdov F.V., Cherkaev G.V., Muzafarov A.M.

Enikolopov Institute of Synthetic Polymeric Materials
cephe@mail.ru

Silicone containing monomers and polymers based on them are the most important class of organosilicon compounds of great practical importance: in medicine, mechanical engineering, aerospace, in the production of defoamers, softeners, lubricants, and many other areas of household and industrial chemicals.

The introduction of organic substituents and functional groups of various nature into the structure of such compounds is, in turn, a defining synthetic step on the way to the creation of materials based on them.

In our work, we have developed an integrated approach to the preparation of a wide range of organosilicon monomers and polymers using azide-alkyne cycloaddition reactions (CuAAC) [1–3].

We believe that our proposed strategy for obtaining organosilicon monomers and polymers with virtually any organic and functional framework, can significantly affect the development of polymeric organosilicon chemistry in science and its practical application, and can also be extended to the synthesis of other classes of polymers.

The work was supported by the Russian Science Foundation № 21-73-10082.

References:

1. Migulin, D.; Milenin, S.; Cherkaev, G.; Zezin, A.; Zezina, E.; Muzafarov, A. Reactive and Functional Polymers, 2020, 154, 104648.
2. Milenin, S.A.; Drozdov, F. V.; Bezlepkina, K.A.; Majorov, V. Yu.; Muzafarov, A.M. Macromolecules, 2021, 54, 6, 2921–2935
3. Kseniya A. Bezlepkina, Sofia N. Ardabevskaia, Kseniia S. Klokova, Aleksei I. Ryzhkov, Dmitry A. Migulin, Fedor V. Drozdov, Georgij V. Cherkaev, Aziz M. Muzafarov, and Sergey A. Milenin, ACS Appl. Polym. Mater. 2022, 4, 9, 6770–6783