

# SYNTHESIS AND INVESTIGATION OF SURFACE ACTIVITY AND SELF-ORGANIZATION OF AMPHIPHILIC STEREOREGULAR CYCLOSILOXANES

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Amphiphilic substances of various nature and structure are used in almost every field of human activity, so the task of creating, studying and searching for new applications has always been and will always be urgent. Among other things, siloxane surfactants are widely used due to their unique surface-active properties. In the course of this work, a representative number of amphiphilic stereoregular organocyclosiloxanes with phenyl substituents at the silicon atom were synthesized on the basis of previously obtained and developed methods of template synthesis of stereoregular metallocyclosiloxanes [1-2] at INEOS RAS. The study of monolayers of these compounds using a Langmuir bath and their visualization using Brewster-angle microscopy revealed a number of dependences of the self-organization of stereoregular cyclosiloxanes on their size, the presence of a spacer between the hydrophilic group and the siloxane ring, and their stereoregularity (fully stereoregular or tris-cis/ tris-trans). The dependence of the tendency to form intermolecular bonds in the monolayer on the cycle size was revealed by the method of multiple compression of monolayers. The study of the equilibrium spreading pressure of amphiphilic stereoregular cyclosiloxanes confirmed the dependence of the thermodynamically stable state of the monolayer on the presence of a spacer between the siloxane ring and the hydrophilic group and on the stereoregularity of the cycle (fully stereoregular or tris-cis/ tris-trans). Methods of functionalization and further modification of stereoregular cyclosiloxanes were also developed.

## References

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