

STATE DIAGRAM OF DENSELY GRAFTED AMPHIPHILIC HOMOPOLYMER BRUSHES: GRAFTING DENSITY VS SOLVENT QUALITY

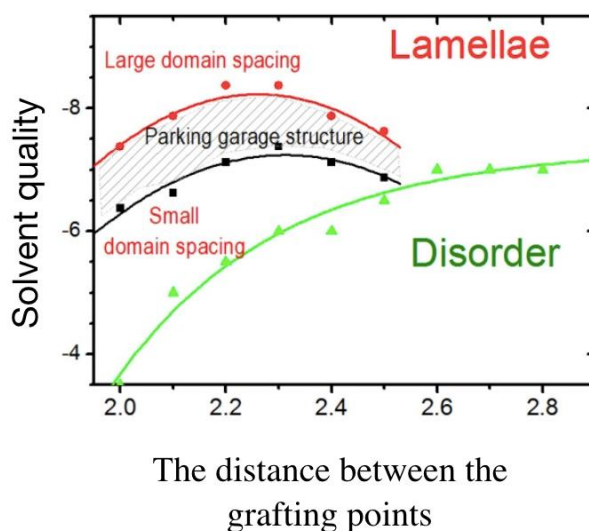
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The report presents the research of polymer layers of amphiphilic homopolymers densely grafted to a flat surface at the nodes of a square lattice. Monomer units of these homopolymers containing groups with different affinities. It was demonstrated that in a selective solvent such layers form lamellae with different period depending on the grafting density and the solvent quality.

The results are summarized as a state diagram in the variables “the distance between grafting points” and “the solvent quality”. There are several regions on the diagram: disorder, region of stability of lamellae, lamellae with significantly different periods and a transitional area with a parking garage structure. The diagram is built by calculating the layer-by-layer structure factor and the angle of inclination of the lamellae in the layer. The calculations were executed for commensurate cell sizes, determined by a special procedure for each grafting density.



Acknowledgments

This research was supported financially by Russian Science Foundation (project number 19-73-20104) and Ministry of Science and Education. The research is carried out using the equipment of the shared research facilities of HPC computing resources at Lomonosov Moscow State University.

References

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