
Understanding the Nanostructure Formation in Block Copolymer Thin Film

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Recent publication of the Multifunctional Materials Design research group in 'Nanoscale Advances' journal.

The paper "Understanding nanodomain morphology formation in dip-coated PS-b-PEO thin films" was published in the September issue of [Nanoscale Advances](#) (Volume 3, Issue 17).

The research work for the manuscript was conducted under the SUPER-WEAR project (Super-stretchable functionalized materials and fibers for third generation wearable technology) funded by the Academy of [Finland](#) and led by Prof. Jaana Vapaavuori.

All experiments were performed by Hoang M. Nguyen, and the TEM analysis was done by Swarnalok De. The development of the theory was a joint effort of both Hoang M. Nguyen and Ariane V. Mader.



Hoang M. Nguyen about the publication: "Block copolymer (BCP) thin films prepared by dip-coating are increasingly investigated, owing to the many promising application areas, the facility, and the industrial scalability of this technique. Yet, the effect of different dip-coating parameters on BCP nanostructure formation is still underdeveloped and the results of previous literature are limited to a few block copolymers.

Here, we study the effect of the withdrawal rate and solvent selectivity on the morphology evolution of dip-coated polystyrene-b-poly(ethylene oxide) thin films by applying a wide

range of dip-coating speeds and altering the volume ratio of the tetrahydrofuran–water solvent system. Notably, we have obtained a hexagonally packed BCP pattern with long-range order without the need for post-annealing processes."

Read the [original article](#) on Aalto University.