# Controlling the Growth and Morphology of Self-Assembled Films and Polymers on Ionic Substrates

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Achieving control over formation of molecular films on insulating substrates is important for designing novel functional materials and devices. Our recent work focused first on the identification of the main factors which governing successful control of molecular self-assembly on insulating surfaces. By depositing specially designed organic molecules with interchangeable functional groups and variable-size aromatic bodies on various alkali-halide substrates we gained control over the formation of highly ordered 2D and quasi 1D domains, but we were also able to form 2D gas phases which slowly dewet to form 3D crystallites.
Density functional theory calculations and atomistic molecular dynamics calculations were used to understand the qualitative difference in growth modes for two different molecules and to determine the role played by entropy loss in the morphology and growth modes of self-assembled films.
The achieved knowledge on growth mechanisms of organic thin-films was second used to fabricate desired precursor structures which could then subsequently be polymerized. We present an example where a UV-induced polymerization was used in order to create micrometer long polymer fibres.

## References

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