The initiated chemical vapor deposition of tailored polymer thin films - Fundamentals to advanced functional applications

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Device miniaturization and the consequent need for new thin film materials on the nanoscale is a current trend in many application areas of polymers in research as well as industrial production lines.

The initiated chemical vapor deposition (iCVD) process enables the fabrication of tailord polymer thin films on the nanoscale and is able to keep up with these requirements. Solvent-free deposition on complex geometries and large-area substrates, high film quality and the ability to coat temperature-sensitive substrates are just some of the many advantages of iCVD.

The talk demonstrates the advantages of the iCVD process with regard to the development of new materials as well as the improvement of existing applications. This includes the fabrication of new gradient copolymer thin films with completely new chemical and physical properties [1] as well as the functionalization of gas sensors and soft organic conductors to improve the performance of these materials in high humidity [2]. Furthermore the deposition of electret thin films via iCVD is presented [3], which are applied in noval magnetic field sensors [4]. In-situ quadrupole mass spectrometry coupled to the iCVD process is applied to increase the overall process control for industrial applications and to obtain a powerful tool for the real-time investigation of the underlying reaction kinetics [5].

It turns out that the process provides new pathways for many application fields requiring precise film thickness control and high film quality.

References

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