Tutorial #4

Plasma etching and surface processing

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Low pressure plasmas are widely used in micro and nanotechnologies. Thanks to the advantages of plasma, it is possible to achieve surface structuring at the nanoscale while preserving the critical dimensions (CD) of the pattern. The etching depth can be controlled at the atomic scale using Plasma-Assisted Atomic Layer Etching Processes. In this lecture, we will explain the physical and chemical mechanisms involved in plasma surface interactions, leading to the CD transfer of a patterned mask onto a material. Particular attention will be paid to the effect of temperature, especially through substrate cooling, on modifying the chemistry.