

Diagnostics of deposition plasmas

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Diagnostics of deposition plasmas

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The processes relevant for the deposition of thin layers of various materials will be summarized for various types of in situ and remote plasma deposition approaches. These processes

1. plasma production, dissociation and transport,
2. wall coverage of one monolayer,
3. recirculation and wall association,
4. residence in the vessel,
5. accumulation in wall of e.g. H atoms

have all their typical time constants. Thus time modulation and time resolved measurements can learn us more about the importance of the various sub processes. The diagnostics techniques aimed at the determination of the various plasma parameters, the abundances of molecular and atomic constituents and radicals will be reviewed. It will be shown that the (easier) measurement of the depletion of the injected monomers and the generation of new monomers are related to the more demanding measurement of radicals. Some specific cases will be discussed to illustrate the various processes and the analysing techniques. It is concluded that a combination of advanced diagnostic techniques and more classical methods can give the most complete picture of the kinetics of the plasma deposition process.