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Advances in Atmospheric pressure PECVD: the Influence of Plasma Parameters on Film MorphologyJohn Hodgkinson¹, David Sheel¹, David Sawtell¹¹University of Salford, Salford, United Kingdom

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Atmospheric pressure (AP) PECVD systems have attracted considerable interest in recent years due to the significant benefits for large area, low cost substrates and low temperature operation. However to date, the film properties have tended to be compromised compared to those offered by more established technologies. In particular whilst growth may be possible at significantly reduced substrate temperatures, the films are typically amorphous due to reduced surface mobility. Additionally, film density can be reduced compared to competitive vacuum based approaches due to a lack of ion bombardment. Recent advances in AP plasma technology have shown considerable potential, with increased stability and with some reports proposing the possibility of ion based interactions at atmospheric pressure. In this work we apply this next generation technology to an APCVD process, enabling control of film growth and morphology beyond state of the art for current AP barrier discharge based deposition processes.

Keywords

Plasma

CVD

Atmospheric Pressure

Non-thermal

Morphology