

Dynamic of HiPIMS plasmas - the transport from target to substrate

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The dynamic of high power pulsed magnetron plasmas is analysed using various diagnostics ranging from optical emission spectroscopy, probe diagnostics to mass spectrometry. It is shown that structure formation in these plasmas is driven by the Simon-Hoh instability leading to the appearance of rotating spokes along the racetrack of the magnetrons. The plasma parameters in these rotating ionization zones are measured using time resolved optical and mass spectrometry indicating that the energy distribution of the ions reaching the substrate are directly connected to the appearance of the spokes. By using various triggering mechanism, the plasma parameter of an isolated spoke are determined. The underlying mechanisms are discussed to explain the good performance of HiPIMS plasmas for material synthesis

References:

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