Abstract Submitted
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Investigating the effect of Argon Pressure on DC and High Power Magnetron Plasmas BAYSHA BERNALES, Florida A&M University, RUSTEM BOLAT, ANDRE ANDERS, JONATHAN SLACK, Lawrence Berkeley National Laboratory, PAG TEAM, EETD TEAM — Smart Glass is fabricated by depositing thin films of specialized material onto a transparent substrate. When a potential is applied across the surface of the Smart Glass, it changes its optical properties. Direct Current Magnetron Sputtering (DCMS) and High Power Impulse Magnetron Sputtering (HiPIMS) are two methods of PVD that are used to fabricate this material. In previous research, it has been noted that magnetron plasmas have localized ionization zones that rotate clockwise in DCMS and counterclockwise in HiPIMS. Not much is known about what causes the change in rotation. This research seeks to investigate what occurs during the first moments of plasma evolution. Both DC and high power magnetron plasmas were observed as Argon pressure was varied. It was found that pressure had a very pronounced effect on the floating-point potential signal that was received from the probes placed in the plasma. It was found that when a high-pressure jet of Argon was injected into the system, that the rotation pattern of the DC magnetron plasma was disrupted. It was also found that at certain pressures, the voltage signal was less indicative of azimuthal rotation and more indicative of z-direction breathing modes.

Baysha Bernales
FAMU

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