

Abstract Submitted
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Time-Resolved Optical Emission Studies of Pulsed DC Magnetron Plasmas¹ JOSE LOPEZ, WEIDONG ZHU, ABRAHAM BELKIND, Stevens Institute of Technology, KURT H. BECKER, Stevens Institute of Technology and Center for Environmental Systems, STEVENS INSTITUTE OF TECHNOLOGY, HOBOKEN, NJ, USA TEAM, CENTER FOR ENVIRONMENTAL SYSTEMS, HOBOKEN, NJ, USA TEAM — Pulsed DC unbalanced magnetron sputtering is a well-developed deposition technique for coatings and thin films and is widely used in industry to deposit thin films such as alumina, Al₂O₃ and titania, TiO₂. The pulsed modulation of the direct current (DC) has been demonstrated to create plasmas that solve many of the arcing problems observed in DC magnetrons which can lead to non-uniform removal of material from the anode resulting in poor or unusable thin films for high-tech applications. The intense photon emission from the pulsed DC magnetron sputtering plasmas allows for the investigation of the optical plasma emissions with a fast intensified CCD (ICCD) camera. The non-intrusive diagnostic methods of time-resolved optical emission spectroscopy (TR-OES) and time-resolved imaging were used to study the temporal behavior of the various plasma species.

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