

GEC20-2020-000105

Abstract for an Invited Paper
for the GEC20 Meeting of
the American Physical Society

Plasma Deposition Of Oxide Materials for Photonics and Energy

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Innovation in materials science and engineering resides in our ability to design new materials with tailored properties (electrical, optical, magnetic, etc.) by controlling their microstructure. One of the most powerful means to uniquely arrange matter at such scale is to use plasmas due to their unique ability to provide simultaneously a variety of particles such as ions, neutral atoms and radicals. In this presentation, we will focus on the growth of various oxide materials in the form of thin films, including undoped and doped vanadium dioxide, samarium nickelate, titanium oxide using either pulsed laser deposition or dielectric-barrier discharges. They are exploited for various applications including photonics and energy.