Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Dual RF assisted Pulsed Laser Deposition of Transitional Metal Nitride Thin Films.[1] HEMAN BHUYAN, PARTHA SAIKIA, MIGUEL ESCALONA, MARIO FAVRE, EDMUNDO WYNDHAM, Pontificia Universidad Catolica de Chile, JULIAN SCHULZE, Ruhr University Bochum, FELIPE VELOSO, Pontificia Universidad Catolica de Chile, FONDECYT COLLABORATION, PLASMA TEAM — Dual radio frequency capacitively coupled plasma assisted pulsed laser deposition (PA-PLD) have the advantage of preventing the micro-particles reaching the substrate during thin film depositions. The plasma DC self-bias activates the substrate surface and destroy the large micro-particles reaching on it. The dual frequency offers the advantage of controlling the ion bombardment energy independently of the ion flux by tuning the low frequency (LF) power. We have compared transition metal nitride thin films such as the titanium nitride (TiN) and tungsten nitride (WN) in the hybrid configuration PAPLD. Optical emission spectroscopy was carried out during deposition. Standard surface science diagnostics like, x-ray diffraction, scanning electron microscopy, x-ray photoelectron spectroscopy and atomic force microscopy were used to characterize the deposited thin films. A comparative analysis of the thin films deposited by conventional PLD and PA-PLD, has shown that the PA-PLD technique improves the quality of the deposited films with respect to their stoichiometry, morphology and deposition rate.

[1]Authors acknowledge the FONDECYT Grant No. N 1170261 and 3160179.

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Date submitted: 18 Jul 2018 Electronic form version 1.4