Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Application of Plasma processing for conversion of salt infiltrated polymer films to metal oxide films.[1] JIM CONWAY, NCPST, DCU, Ireland, MATTHEW SNELGROVE, School of Physical Science, DCU, Ireland, ROSS LUNDY, PRAVIND KUMAR YADAV, AMBER, TCD, Ireland, CLARA ZEHE, School of Physical Sciences, DCU, Ireland, NATIONAL CENTRE FOR PLASMA SCIENCE TECHNOLOGY, DCU TEAM, MATERIALS GROWTH CHARACTERISATION, DCU COLLABORATION, ADVENCED MATERIALS BIOENGINEERING RESEARCH, TCD COLLABORATION — Oxygen plasma treatment is an alternative to Ultra-Violet-Ozone for conversion of metal-salt infiltrated polymer films to metal oxides films. Ion action at the surface can enhance the process chemistry and resulting film properties in plasma. A Design Of Experiment (DOE) was used to investigate the effects of process time, gas pressure and RF power on plasma processing of P2VP films infiltrated with $AlNO_3$ or $CuNO_3$. Optical Emission Spectroscopy and a Langmuir probe were used to monitor atomic oxygen (O) and ion plasma densities. The processed films were examined using XPS and Ellipsometry. RF and pressure were found to have a strong effect on O/ O_2^+ ratios in the plasma. XPS results indicated that polymer removal and salt conversion complete in minutes using plasma, while UV/O_3 took several hours to achieve similar results. The XPS Silicon Oxide peaks were compared to unprocessed coupons to check for oxidation of the underlying silicon.

[1]Science Foundation Ireland: Award 16/SP/3809 12/RC/2278

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Date submitted: 03 Jun 2019 Electronic form version 1.4