Abstract Submitted
for the GEC20 Meeting of
The American Physical Society

Use of a Reactive ion etch plasma system for conversion of thin salt infiltrated polymer films to metal and metal oxide layers[1]
JIM CONWAY, NCPST, DCU, MATTHEW SNELGROVE, School of Physical Sciences, DCU, ROSS LUNDY, PRAVIND KUMAR YADAV, Amber, TCD, MILES TURNER, STEPHEN DANIELS, NCPST, DCU, DUBLIN CITY UNIVERSITY TEAM, ADVANCED MATERIALS BIOENGINEERING RESEARCH, TCD COLLABORATION — Thin polymer films (¡ 10 nm) can readily be deposited on substrates. Conversion of the polymer film to metal or metal oxide films can be achieved by infiltrating the polymer with metal salt and exposing the resulting film to plasma. Radicals and reactive ions from the plasma can remove both polymer and anionic groups from the salt leaving a metal layer. In Asymmetric Capacitive Plasma systems RF power controls the radical density and also ion density and energy. Increasing RF power to create more radicals also increases ion interaction at the surface and may completely remove the metal layer. Reductive processes using H2 can result in a metal layer at the surface. O2 plasma on the other hand can convert the metal layer to metal oxide. Al salt and Zr salts were used to infiltrate P2VP-OH polymer films and plasma was used to produce thin films whose nature depended on the plasma. XPS analysis was used to monitor the chemical nature of the resulting films.

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

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Date submitted: 12 Jun 2020 Electronic form version 1.4