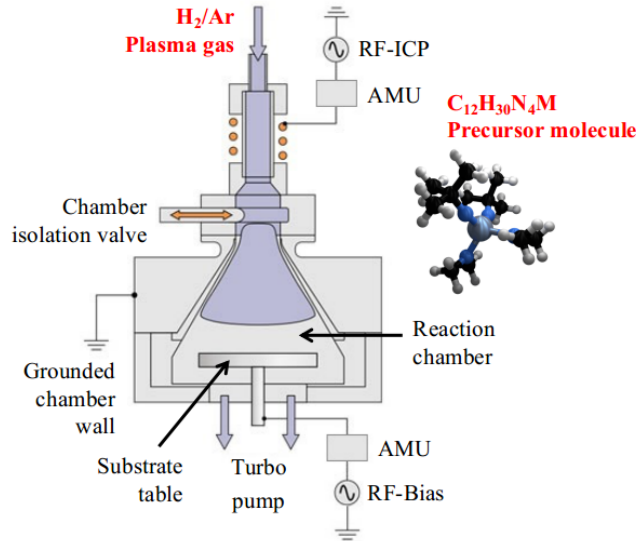

Figure 1: Schematic of Oxford Instruments FlexAL system with substrate biasing incorporated through a second RF power supply connected to the substrate table. This allows enhancement of ion energy by controlling the bias voltage. Additionally, a cartoon of the $(^tBuN)_2(NMe_2)_2Mo$ precursor composition.

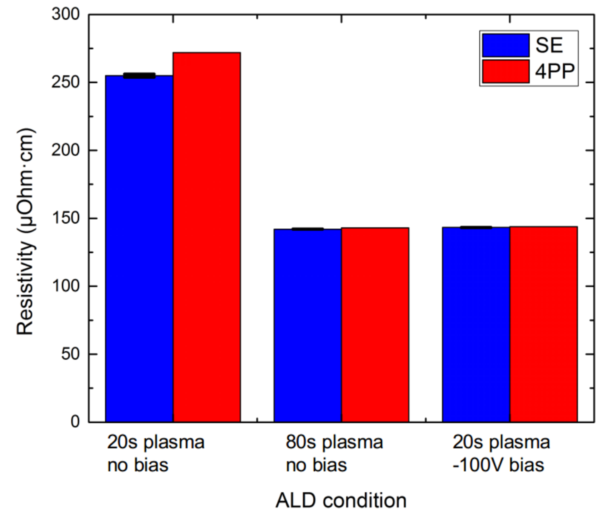

Figure 2: Resistivity of $\sim 30nm$ MoC_x films deposited at 300°C with 20s plasma and 80s plasma without biasing, and with time-averaged bias voltage of -100V applied during the last 10 seconds of the 20 seconds H_2/Ar plasma exposure step. The resistivities were measured using four point probe (4PP) and using spectroscopic ellipsometry (SE).

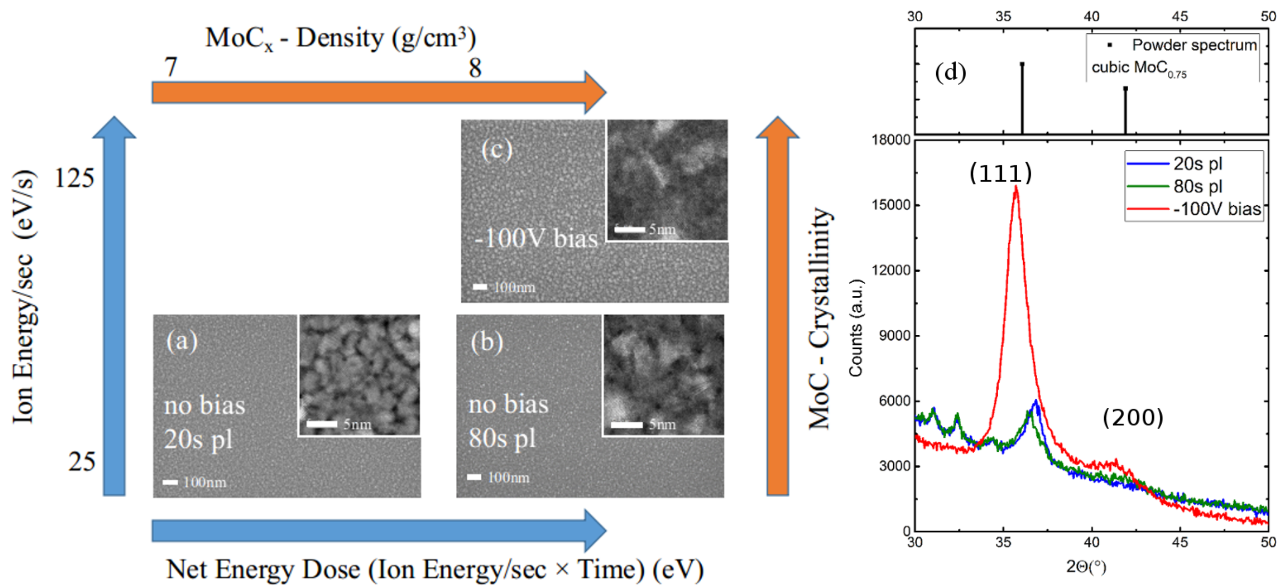

Figure 3: Correlation between ion energy and net energy dose to MoC_x crystallinity and mass density, respectively. Plan-view SEM and high angle annular dark-field (HAADF) TEM images (top right corner) of 30 and 15 nm MoC_x films, respectively, deposited at 300°C with (a) 20s and (b) 80s plasma time without any substrate biasing. (c) 20s plasma with a time-averaged bias voltage of -100V applied during the H_2/Ar plasma exposure step. (d) θ-2θ x-ray diffractograms of powder cubic $\delta - MoC_{0.75}$ and comparison of 30 nm biased and non biased MoC_x films.