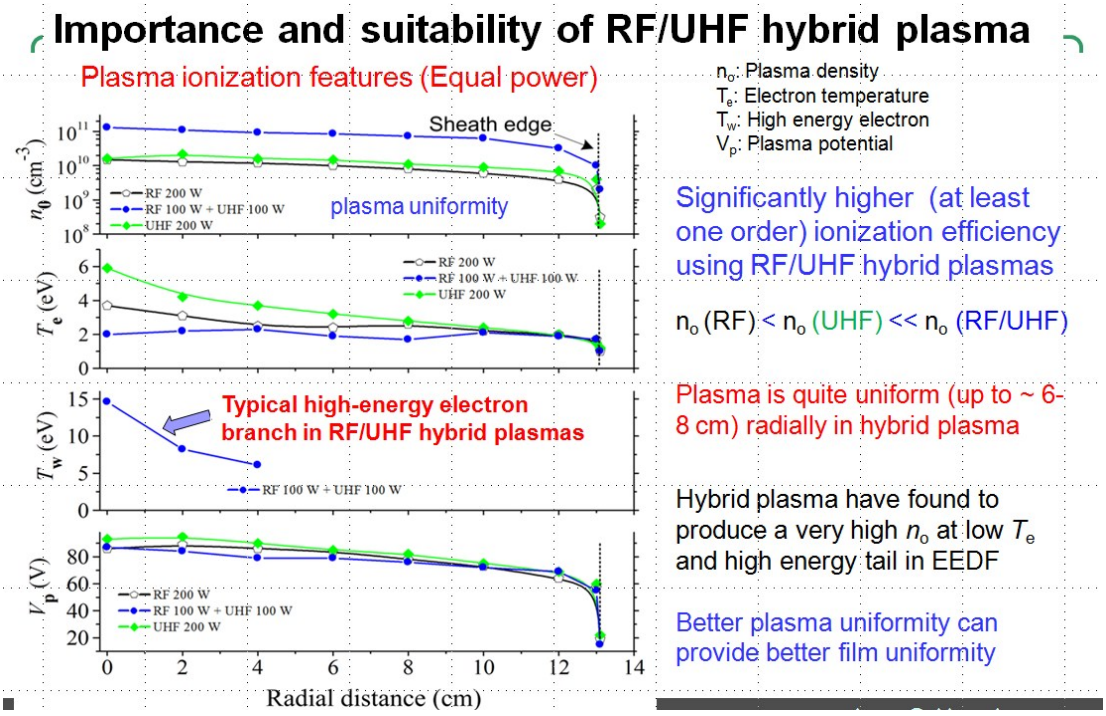
Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supplementary information

Importance of RF/UHF dual frequency PECVD

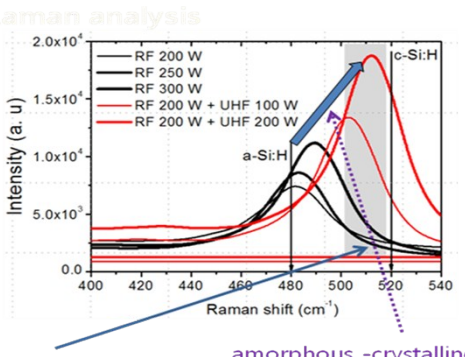
Our earlier experience shows that RF/UHF dual frequency sources can produce significantly high plasma density even at low power. If we apply equal power by RF and UHF sources the plasma density is much smaller than that of their combined effect. Plasma density is also radially uniform, which favors the deposition of uniform film thickness up to larger area.



QD process optimization by combining RF and UHF power

Raman data for Process optimization

Process optimization by plasma control



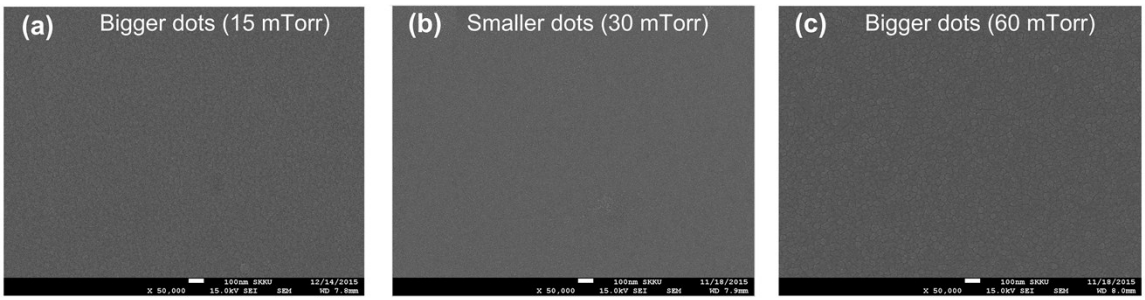
30 mTorr pressure

$N_2/NH_3/SiH_4$ process

Shaded region represents QD feature (one needs nano Si dots or crystalline like film)

amorphous -crystalline Si transition occurs with the addition of UHF power with RF power

SEM data



XPS data: