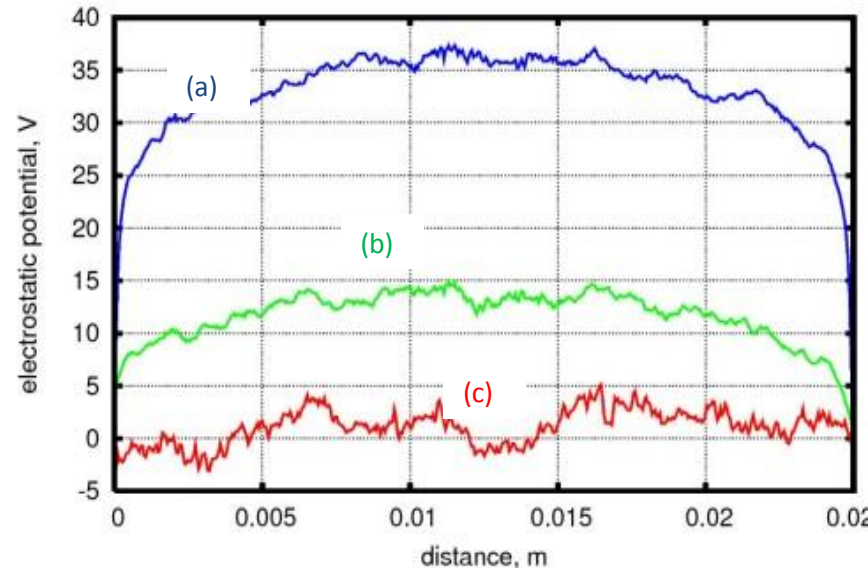


# CONTROLLING PLASMA PROPERTIES: ELECTRON INDUCED SECONDARY ELECTRON EMISSION

- Kinetic studies of bounded plasmas by walls having secondary electron emission (SEE) predict a strong dependence of wall potential on SEE [1-3].
- Sheath oscillations occur due to coupling of the sheath potential and non-Maxwellian electron energy distribution functions [2].



Potential profiles:

- (a)  $E=200\text{V/cm}$  no emission
- (b)  $E=200\text{V/cm}$  with SEE,
- (c)  $E=250\text{V/cm}$  with SEE [1,3]

- When electrons impacting walls produce more than one secondary on average no classical sheath exists.
- Strong dependence of wall potential on SEE allows for active control of plasma properties by judicious choice of the wall material.

[1] Phys. Rev. Lett. 108, 255001 (2012)

[2] Phys. Rev. Lett. 108, 235001 (2012)

[3] Phys. Plasmas 19, 123513 (2012)