"Growth of high-density vertically aligned arrays of carbon nanotubes by plasma-assisted catalyst pretreatment"

A plasma-assisted thermal pretreatment of catalyst films (Ni, Co, or Fe) greatly facilitates the direct growth of high-density vertically aligned arrays of small diameter carbon nanotubes (CNTs) on conductive TiN by purely thermal chemical vapor deposition. Purely thermal catalyst pretreatment gives limited or no growth. The plasma-assisted pretreatment promotes a stronger catalyst-support interaction, which reduces catalyst mobility and hence stabilizes smaller catalyst particles with a higher number density.