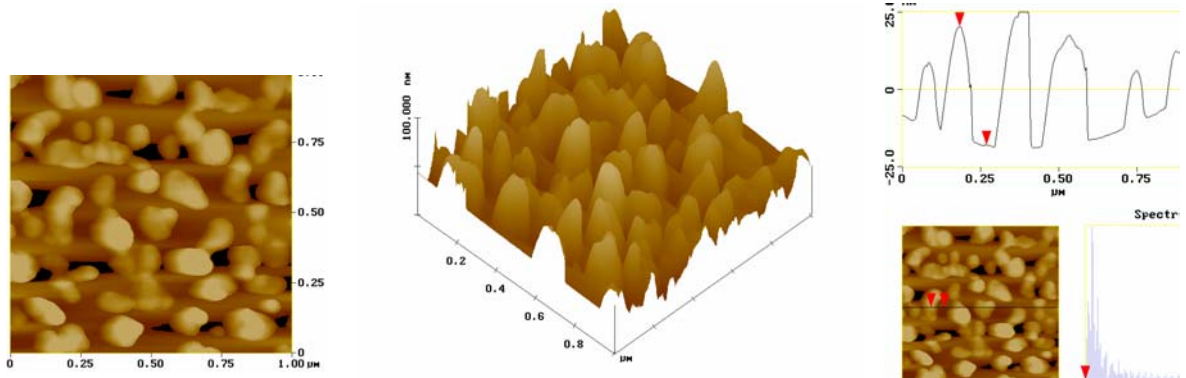
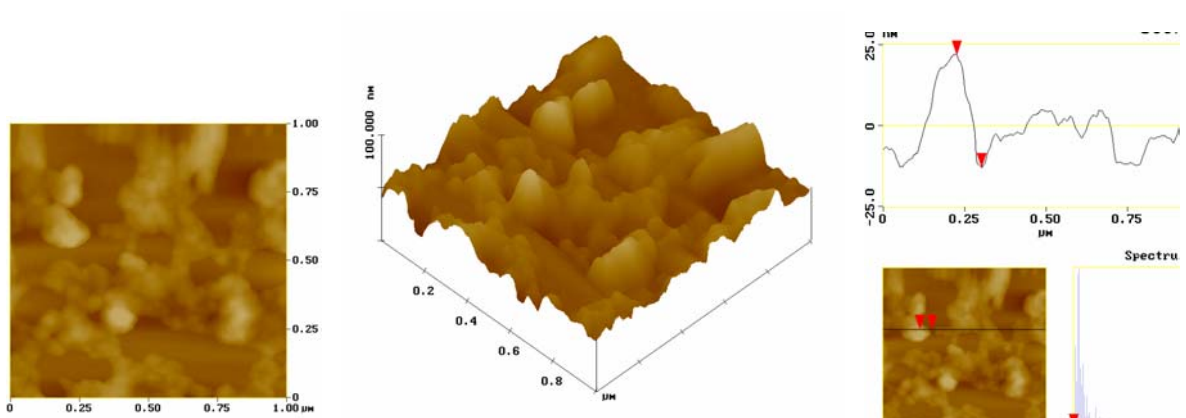


D3、600°C H₂:100 (Ni 7 nm) ; Rms 15.532 nm



D4、600°C H₂:100 (Ni 7 / TiN 20 nm) ; Rms 7.927 nm



D5、600°C H₂:100 (Ni 7 / TaN 10 nm) ; Rms 4.933 nm

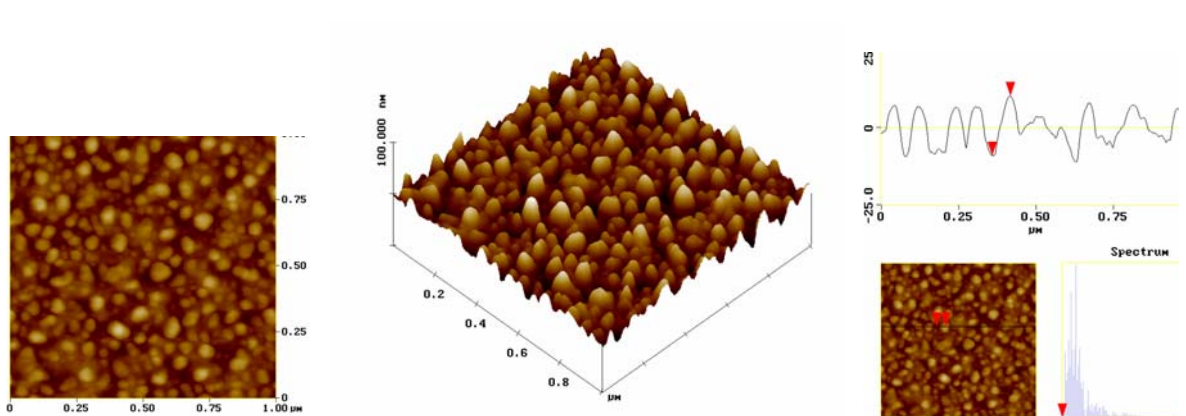
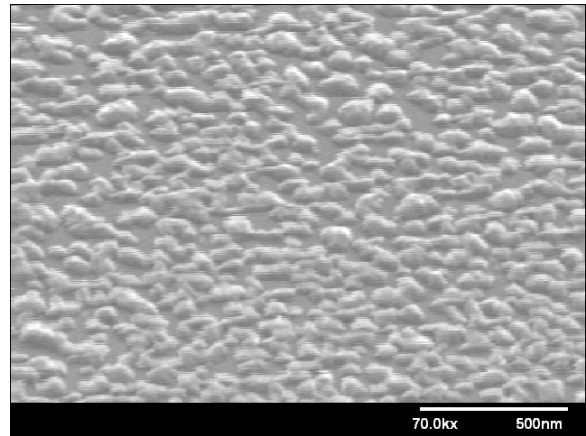
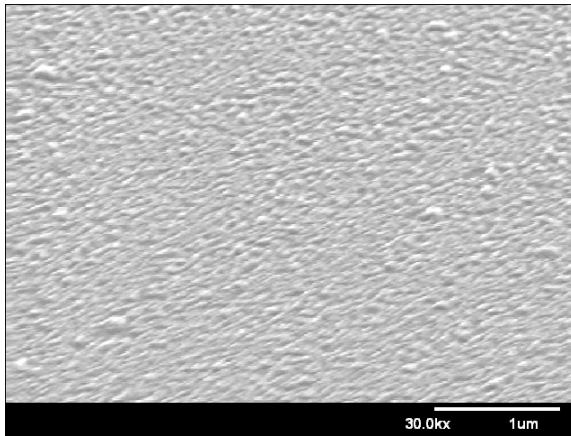
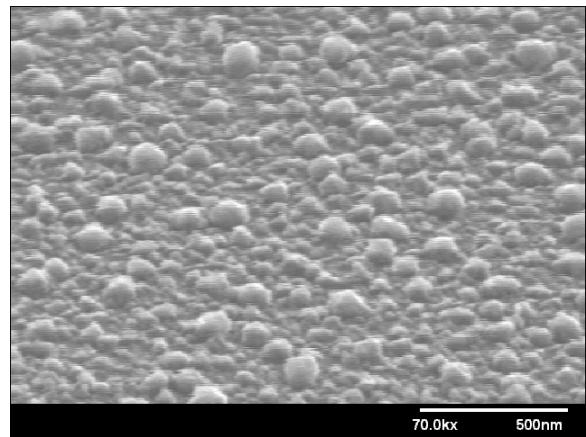
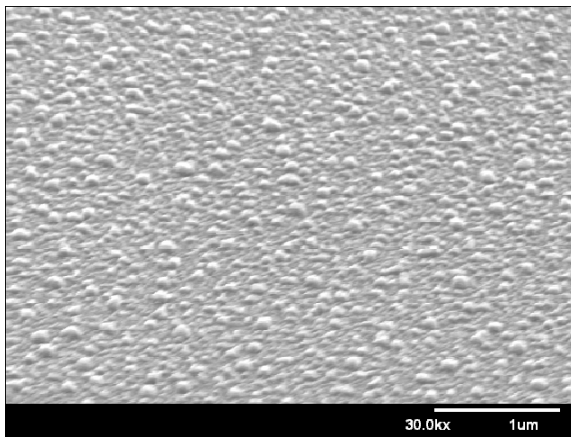


圖 4-23 製程 D 有緩衝層對照組試件(4、5)AFM 圖面

E3、600°C H₂:200 (Ni 7 nm)



E4、600°C H₂:200 (Ni 7 / TiN 20 nm)



E5、600°C H₂:200 (Ni 7 / TaN 10 nm)

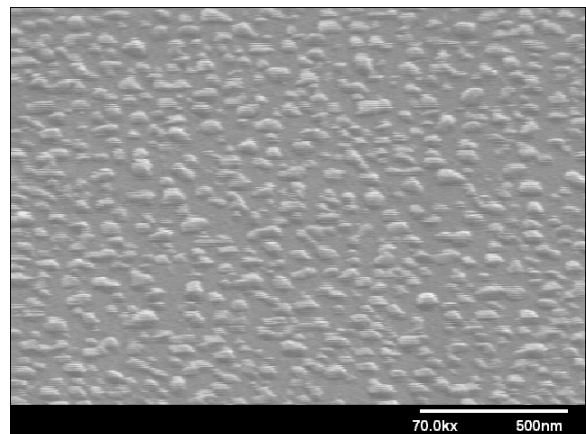
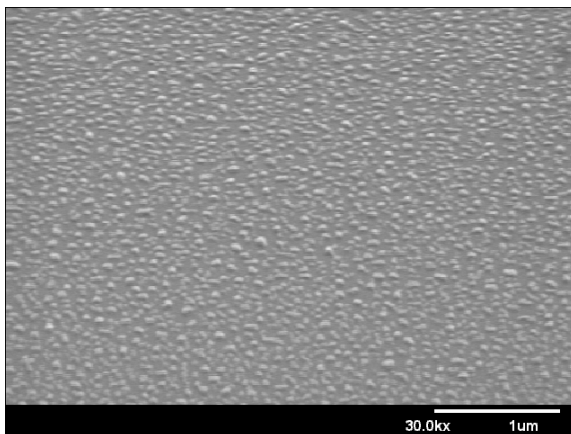
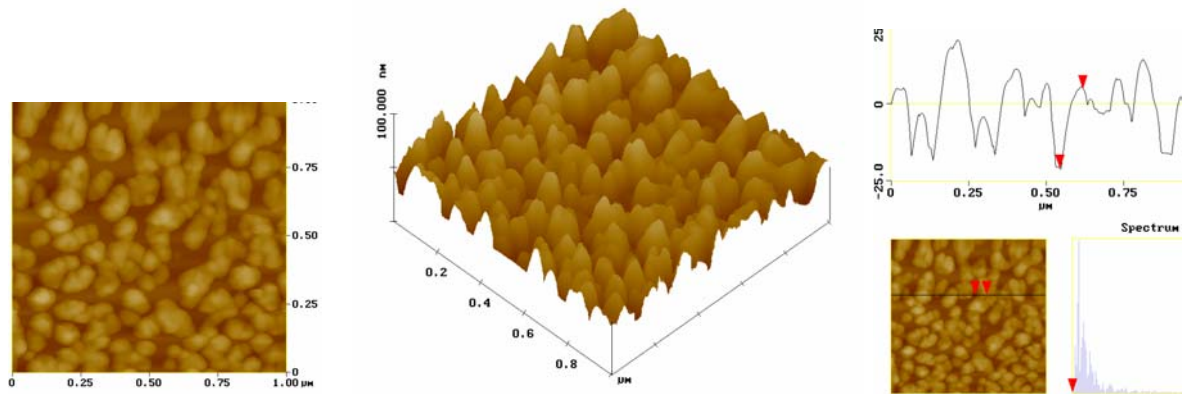
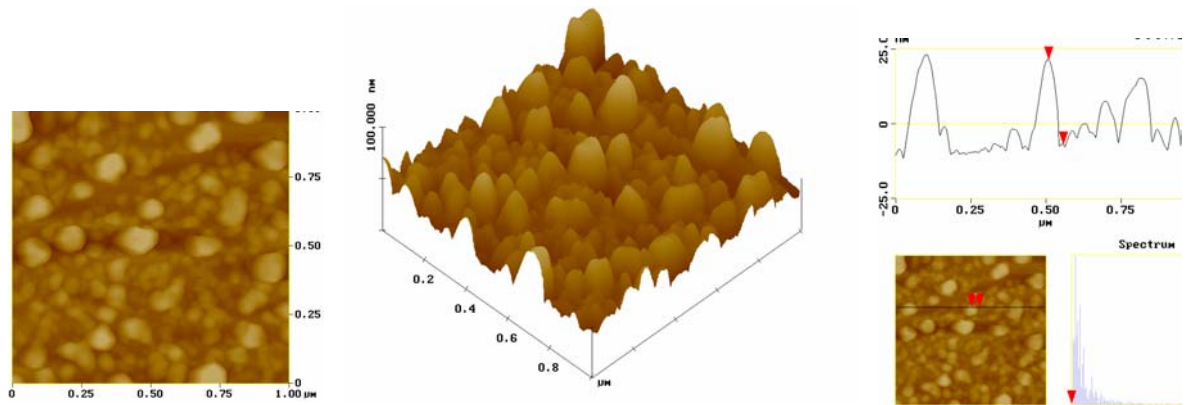


圖 4-24 製程 E 有緩衝層對照組試件(4、5) SEM 圖面(30、70 kx)

E3、600°C H₂:200 (Ni 7 nm) ; Rms 9.175 nm



E4、600°C H₂:200 (Ni 7 / TiN 20 nm) ; Rms 8.888 nm



E5、600°C H₂:200 (Ni 7 / TaN 10 nm) ; Rms 5.764 nm

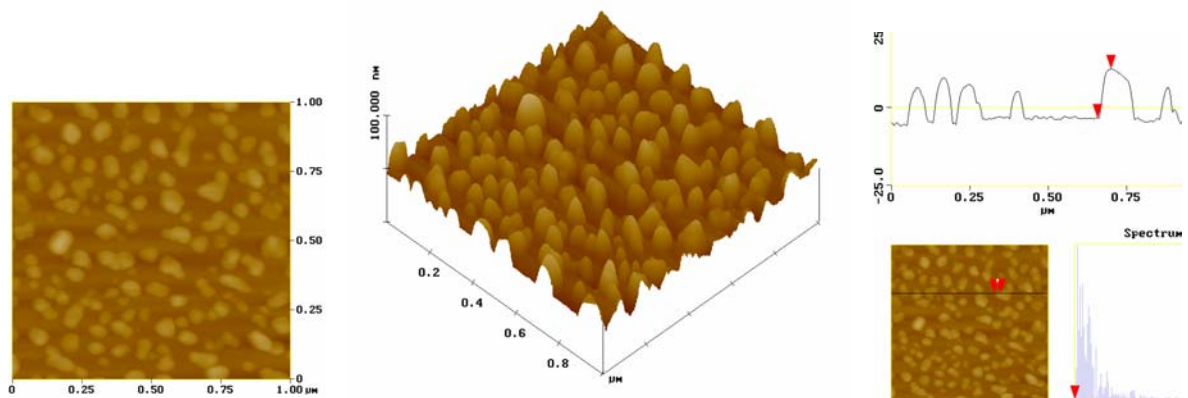
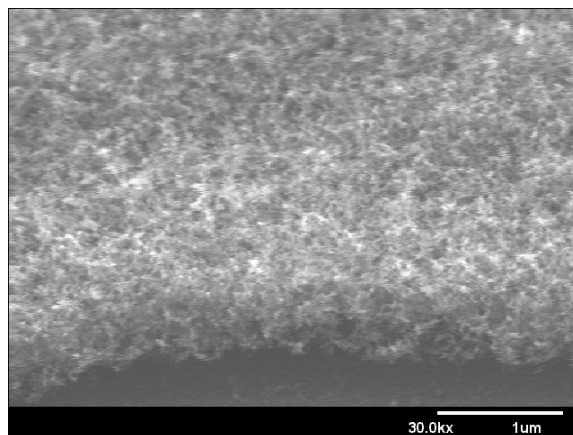
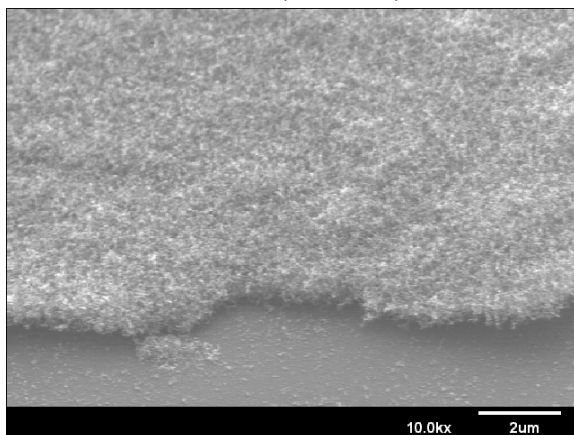


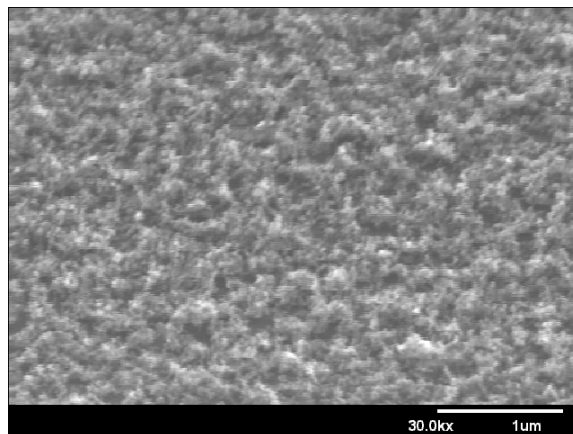
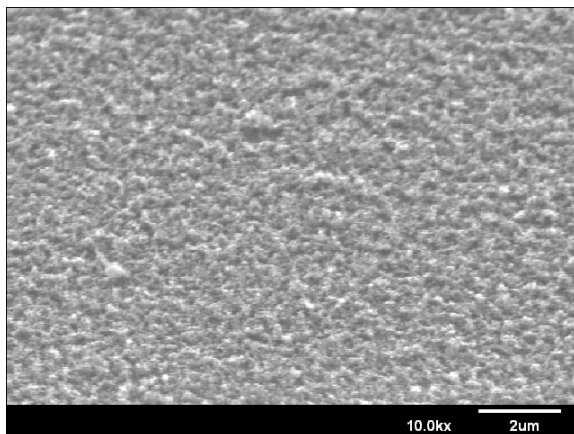
圖 4-25 製程 E 有緩衝層對照組試件(4、5) AFM 圖面

4-7 奈米碳管之 SEM 圖面

A1、550°C H₂:100 (Ni 1 nm)



A2、550°C H₂:100 (Ni 5 nm)



A3、550°C H₂:100 (Ni 7 nm)

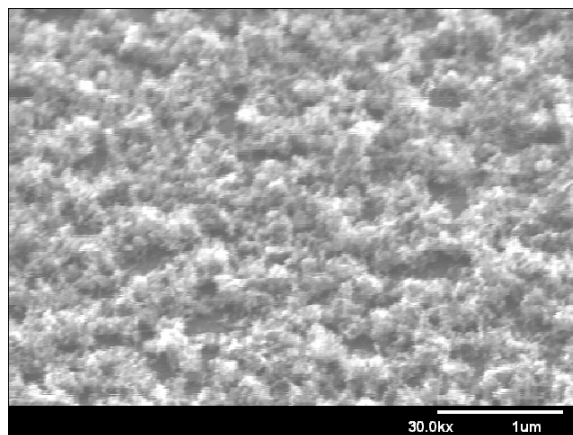
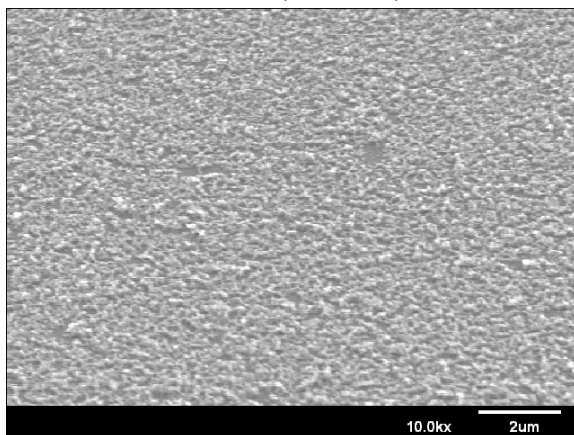


圖 4-26 製程 A 無緩衝層試件(1、2、3) 奈米碳管 SEM 圖面(10、30 kx)