Enhancement of Alignment of CNT Forests at the Bottom Part: a Key to Spinnability

의재근, 오유진[1], 이건홍[1,*]
포항공과대학교; [1]포항공과대학교 화학공학과
(ce20047@postech.ac.kr[*])

Yarning carbon nanotubes (CNTs) has the potential to realize CNT's unique strength and conductivity at the macro scale. CNT forests that can be directly spun into pure yarn are called 'spinnable' forests and are of great interest due to their inherent advantages over other spinning methods that contain impurities. The conditions to produce spinnable CNT forests is extremely sensitive, so many researchers have tried to elucidate the factors for spinnablilty. It is known that the forests should be highly aligned in order to be spun. Using plasma-enhanced chemical vapor deposition, we obtained CNT forests with excellent alignment. Despite their good alignment, however, the forests were non-spinnable. We found that the alignment at the bottom part of the forests was poor, which is commonly observed by other groups. We thought that this ill alignment at the bottom part limits the spinnability and succeeded in enhancing the alignment at the bottom part. As a result, we could achieve spinnable CNT forests that have good alignment throughout their height.