

## 전계 펄스 인가 증발 방법을 이용한 탄소나노튜브의 구조적 특성 연구

박혜윤, 김현욱, 송창은, 지현준, 최시경\*

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### **Structural characteristics of carbon nano tubes(CNTs) fabricated by Thermo-electrical Pulse Induced Evaporation**

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**Abstract :** Since carbon nanotubes (CNTs) are discovered, tremendous attentions have been paid to these materials due to their unique mechanical, electrical and chemical properties. Thereupon, many methods to produce a large scale of CNTs have been contrived by many scientists and engineers. Thus the examination of growth mechanisms of CNTs, which is essential to produce CNTs in large scale, has been an attractive issue. Though many scientists have been strived to investigate and understand the growth mechanisms of CNTs, many of them still remain controversial or unclear. Here we introduce representative growth mechanisms of CNTs, based on broadly employed fabrication methods of CNTs. We applied Thermo-electrical Pulse Induced Evaporation (TPIE) method based on field and thermal evaporation to synthesis of CNTs. However TPIE method was originally devised to fabricate graphene sheets and  $\text{Ge}_2\text{Sb}_2\text{Te}_5$  nanostructures. While performing TPIE experiments to synthesize graphene, we eventually found experimental results widely supporting the growth model of CNTs proposed already. We observed the procedure of growth of CNTs obtained by TPIE method through Transmission Electron Microscopy (TEM). We believe this study provides an experimental basis on understanding and investigating carbon-based nanomaterials.

**Key Words :** carbon nanotubes (CNTs), carbon-based nanostructures, TPIE