Structural Characterizations Of Thermally Treated DNA-Dispersed Double Walled Carbon Nanotubes

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Conclusion

During the heating process, the DNA-dispersed DWNT film decomposes to expose more carbon on the surface leading to a decreased electron acceptance rate during the charge process.

Future Work:
- In-situ Raman at different potentials
- Heat sample to different temperatures
- Look into further applications

Purpose

Objective: Analyze physical changes during heating of DNA-DWNT films and evaluate its effects during the charge and discharge process

Importance:
ENHANCED ENERGY STORAGE

Method

Thin Film Fabrication:
- Disperse DWNTs with ssDNA and sonification
- Filter into film
- Heat to 600°C

Analysis:
- In-situ Raman
- TEM
- SEM
- TG-DTA
- XPS

TG-DTA:
During the heating process, the film decomposes and loses 30% of its weight due to the decomposition of DNA

Results...

TG-DTA: 

XPS:

In-Situ Raman:
The outer tube of the heated DNA-dispersed DWNT accepts electrons less readily during the charging process than the non-heated sample

Results

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