

US EPA ARCHIVE DOCUMENT

Sensing Platforms.....

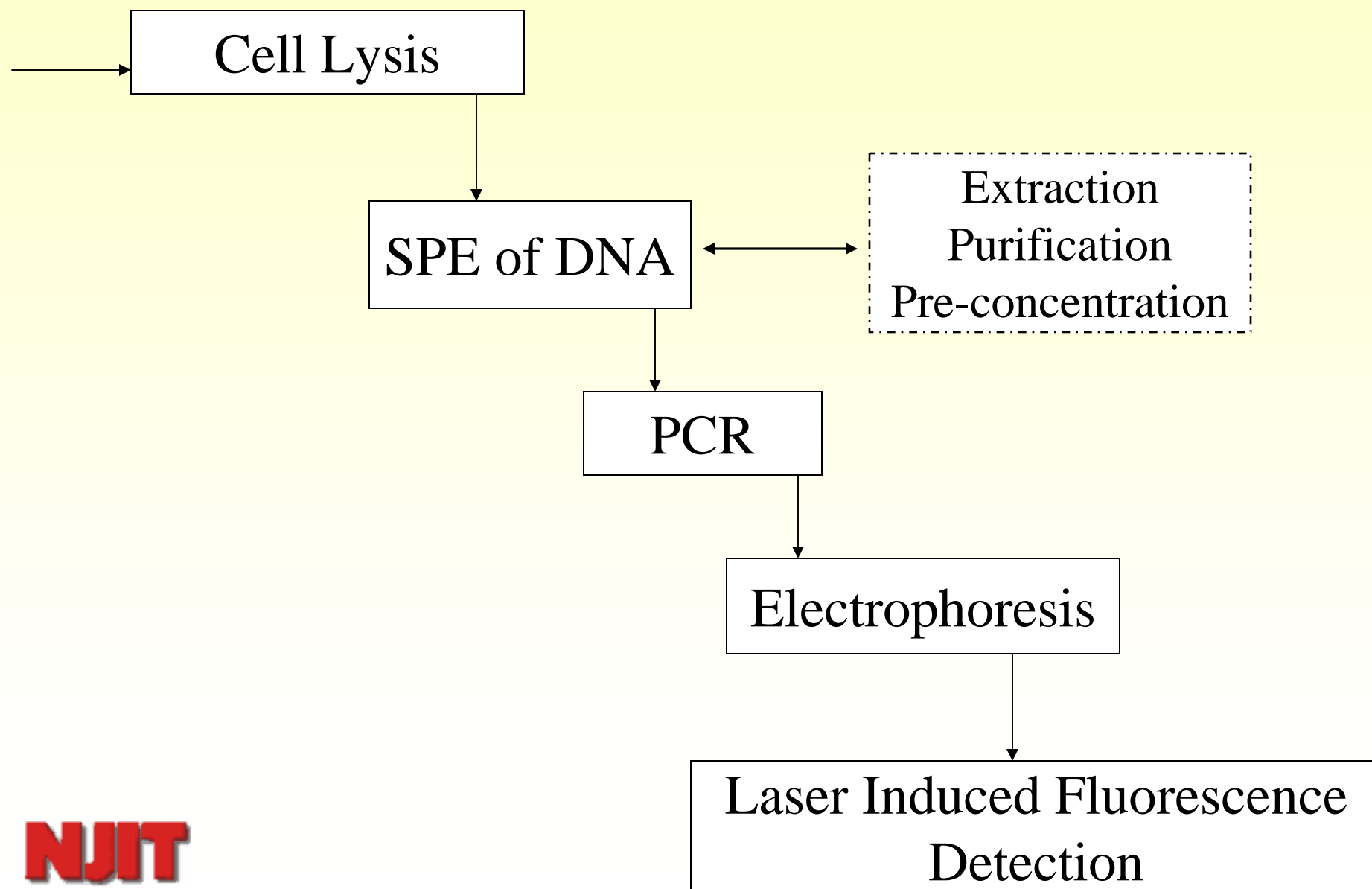
**C. Saridara, M. Karwa, R. Brukh, Z. Iqbal, S.
Mitra**

**Department of Chemistry and Environmental
Science**

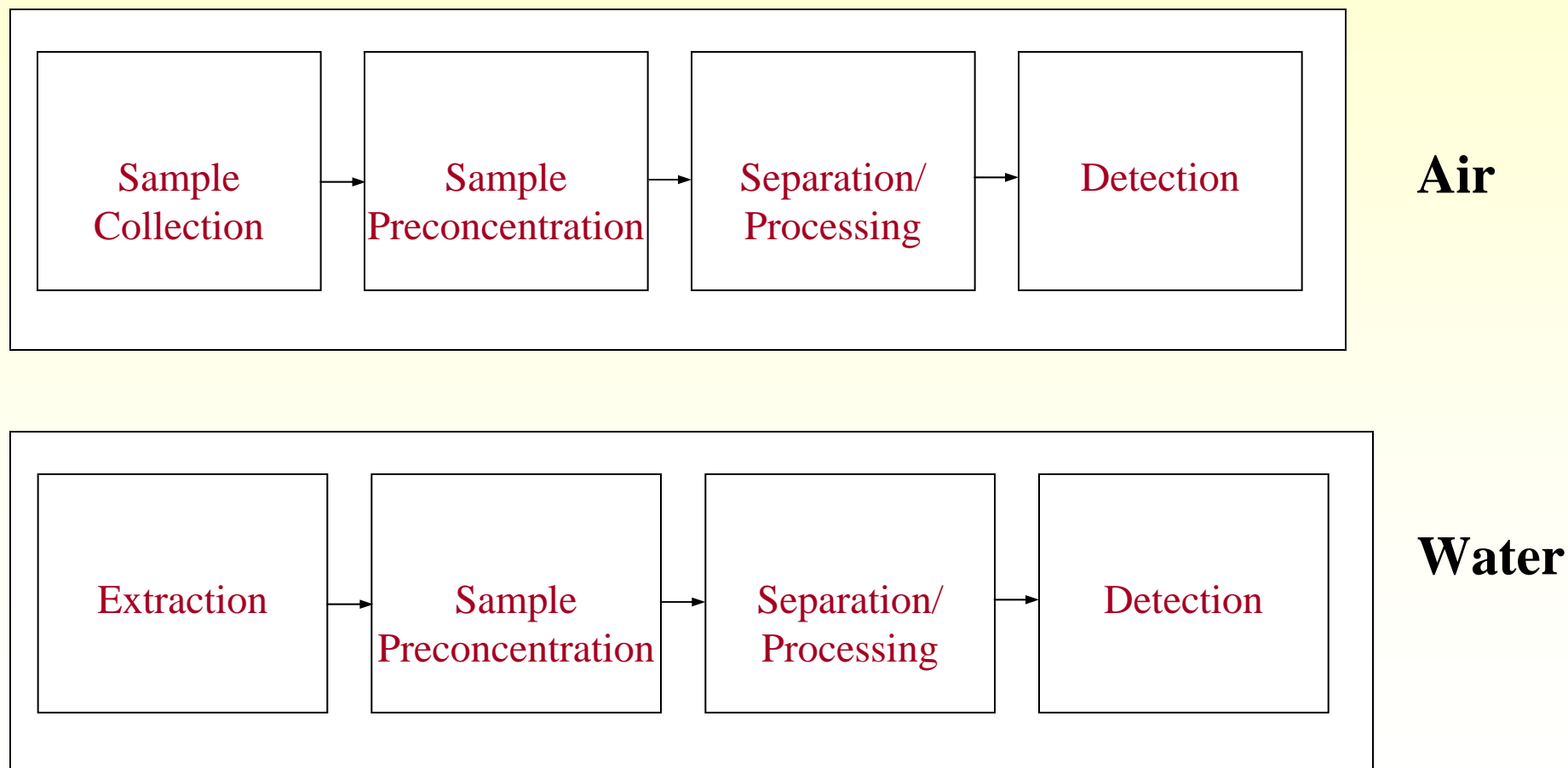
**New Jersey Institute of Technology, Newark,
NJ, USA.**

NJIT

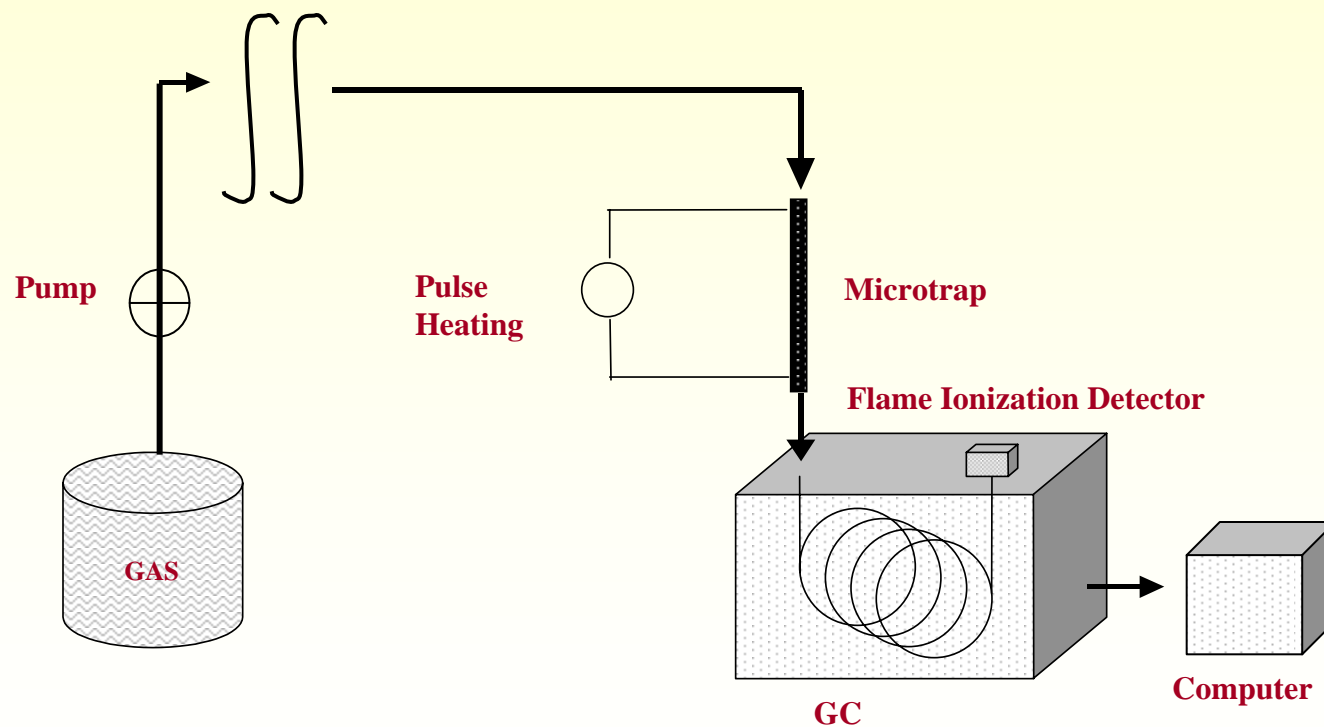
Schematic of the Processes



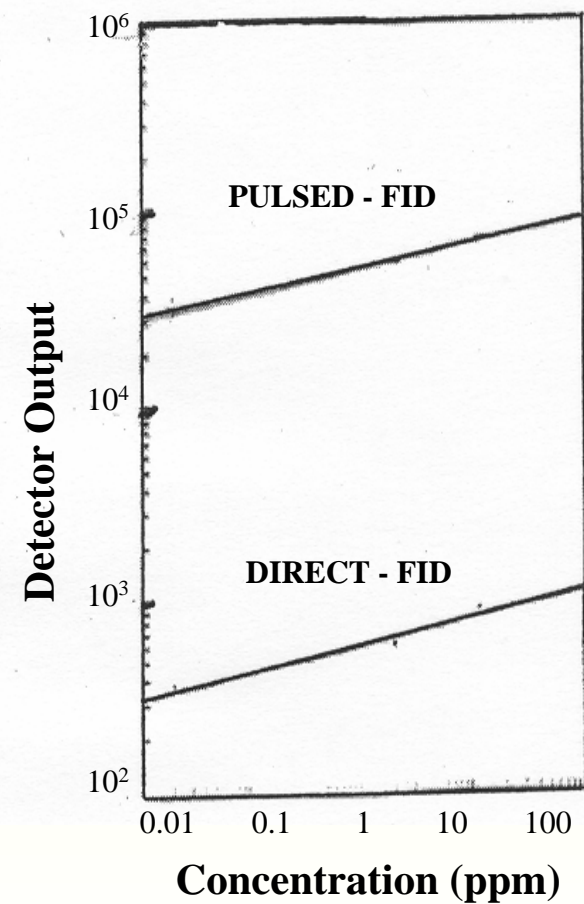
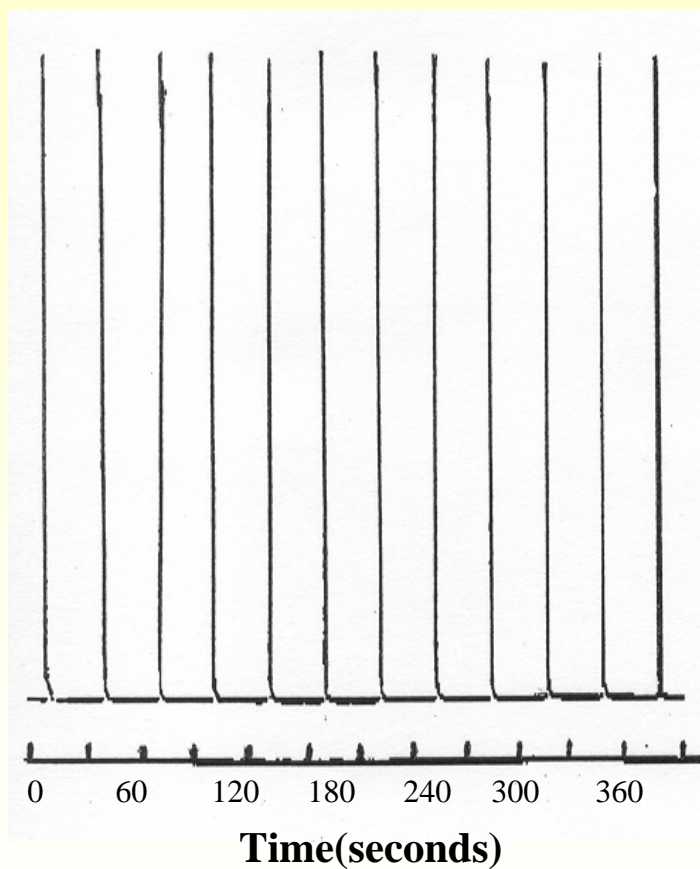
Typical Approach to Trace Monitoring



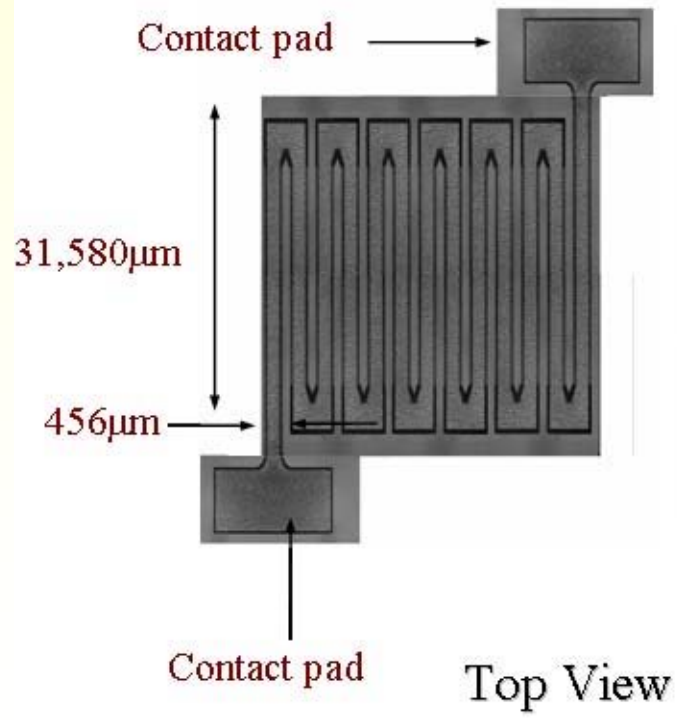
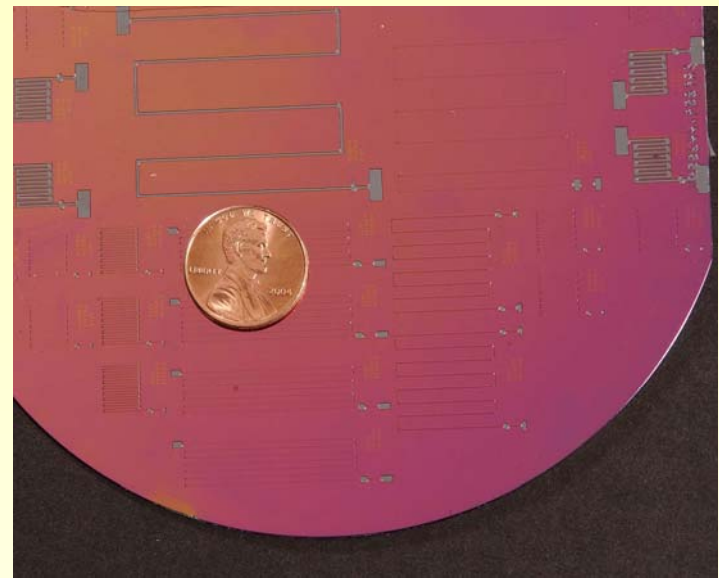
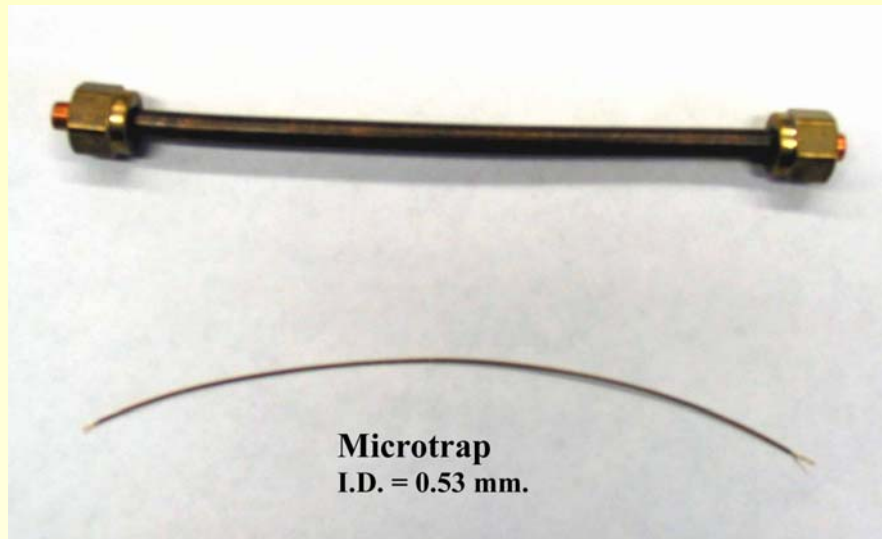
Microtrap for Online Concentration and Injection



Response of the Microtrap Pulsed FID



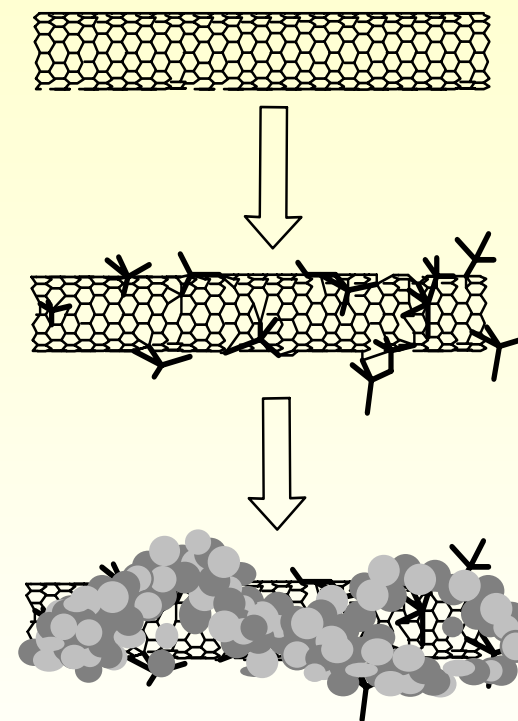
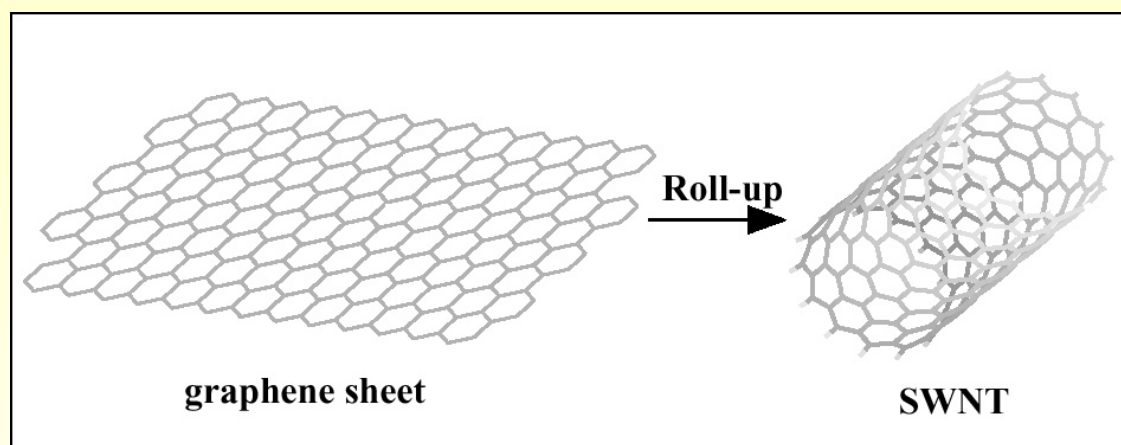
J. Chrom. A. 1072 (2005) 243



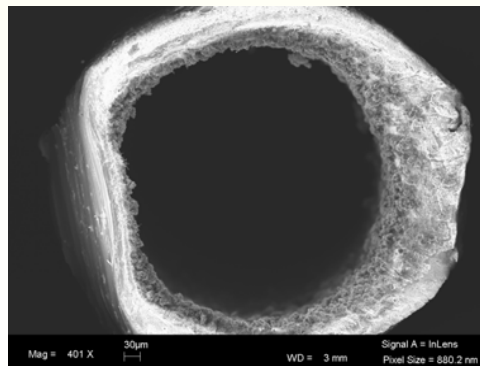
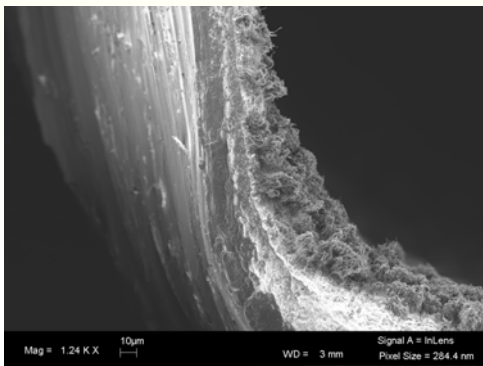
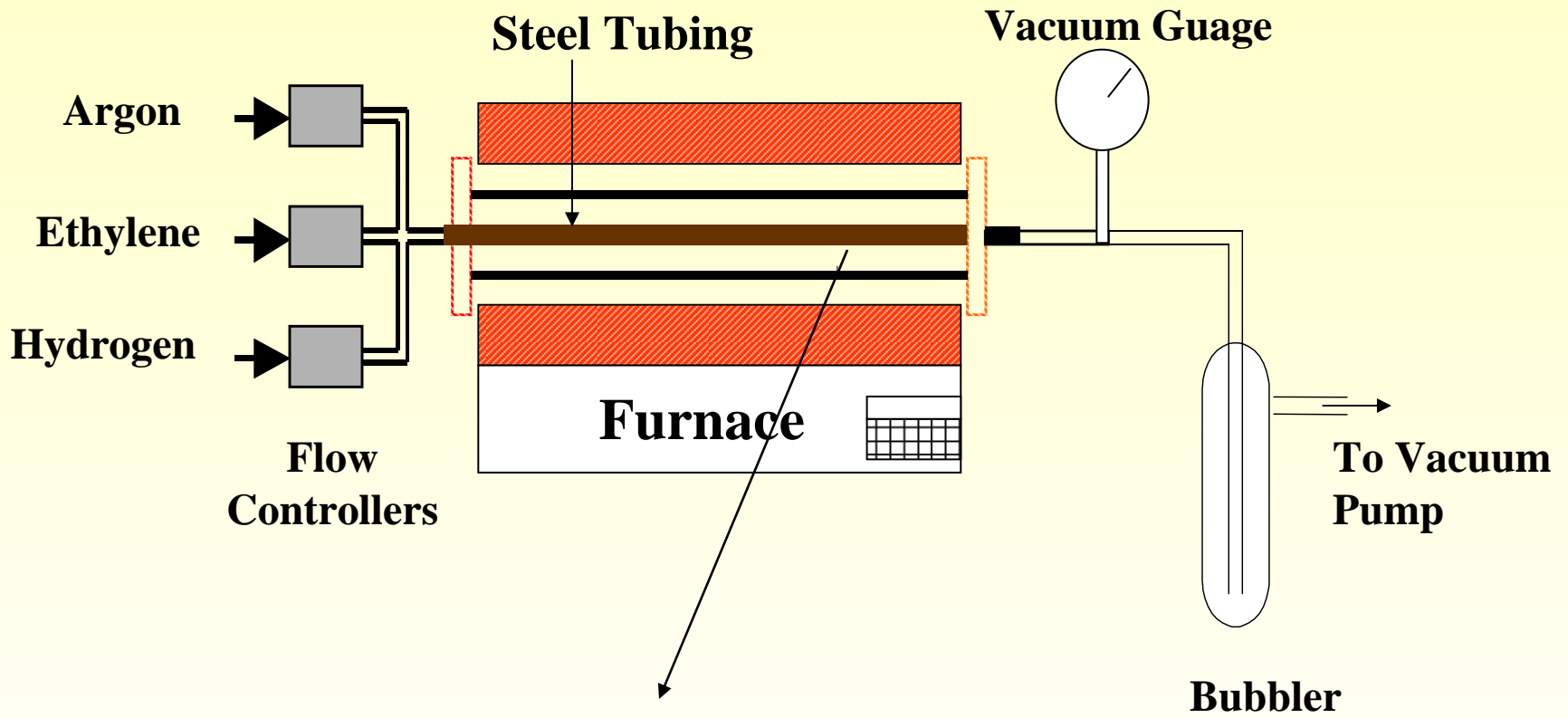
M. Kim and S. Mitra J. Chrom. A. 2000

Scaled Up Self-assembly of Carbon Nanotubes

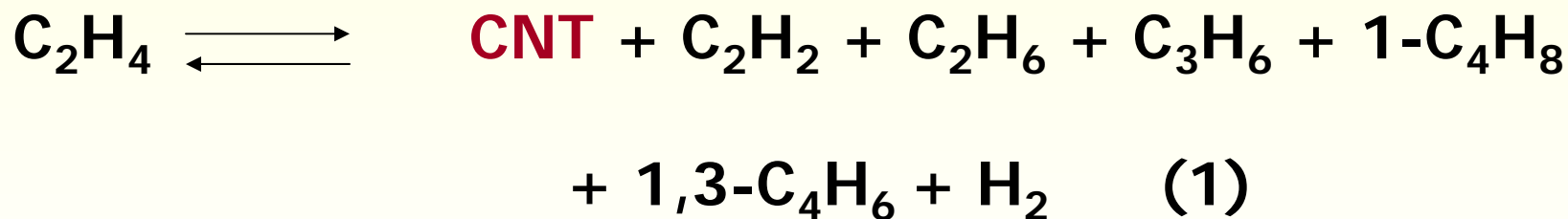
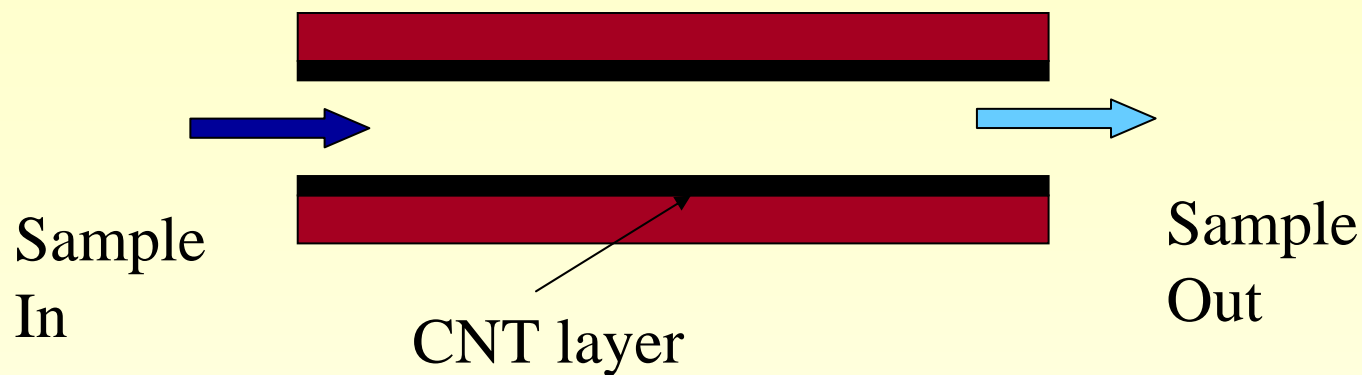
Carbon Nanotubes



- Laser Ablation
- Catalytic Arc
- Catalytic CVD



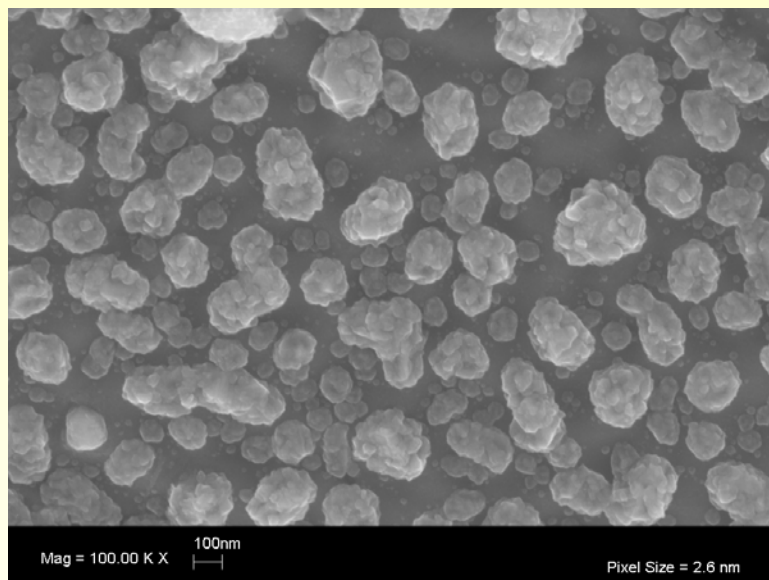
- Catalytic Arc
- Catalytic Laser Ablation
- Catalytic CVD



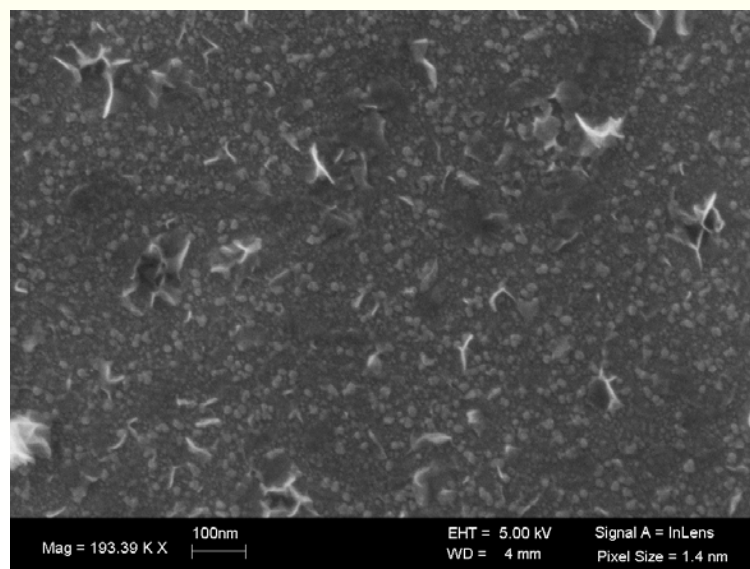
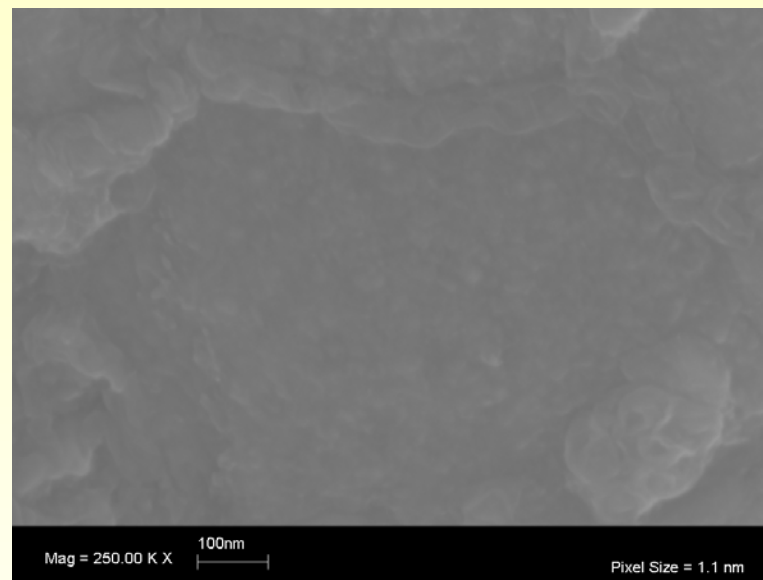
(1) Ref. : Can. J. Chem./Rev. Can. Chim. 78(1): 16-25 (2000)

(2) Ref. : Jacobson, B.I, Smalley, R.E, Am. Sci., 85, 324 (1997)

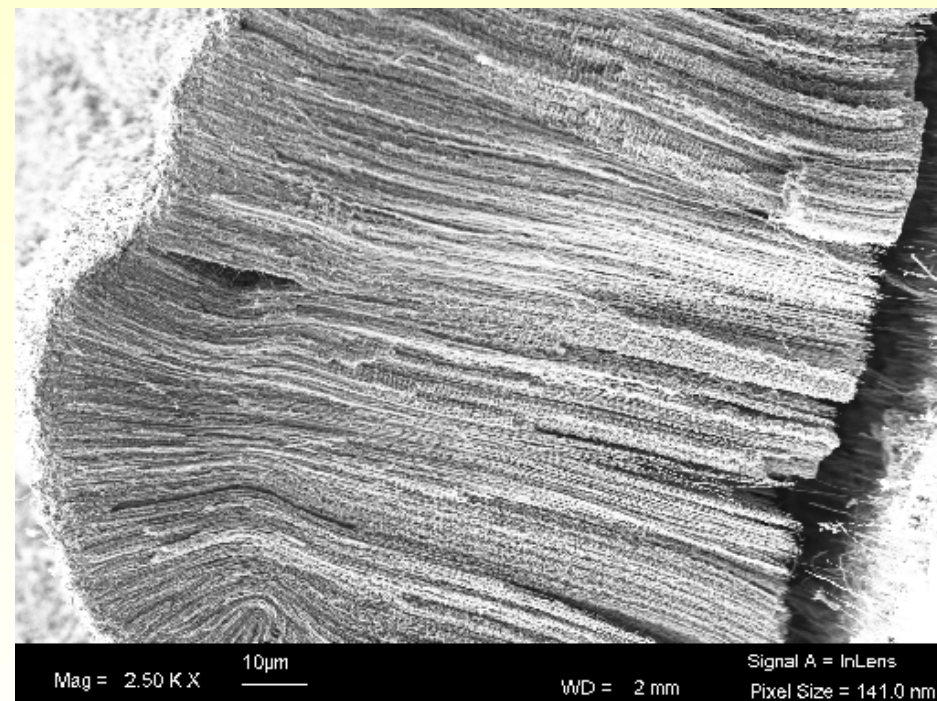
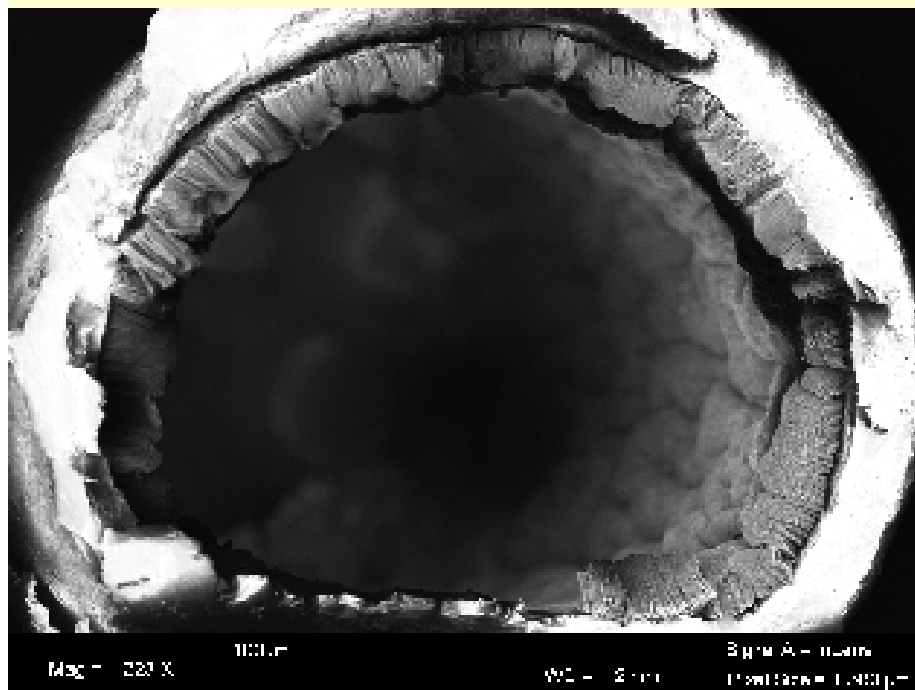
500 C Treatment

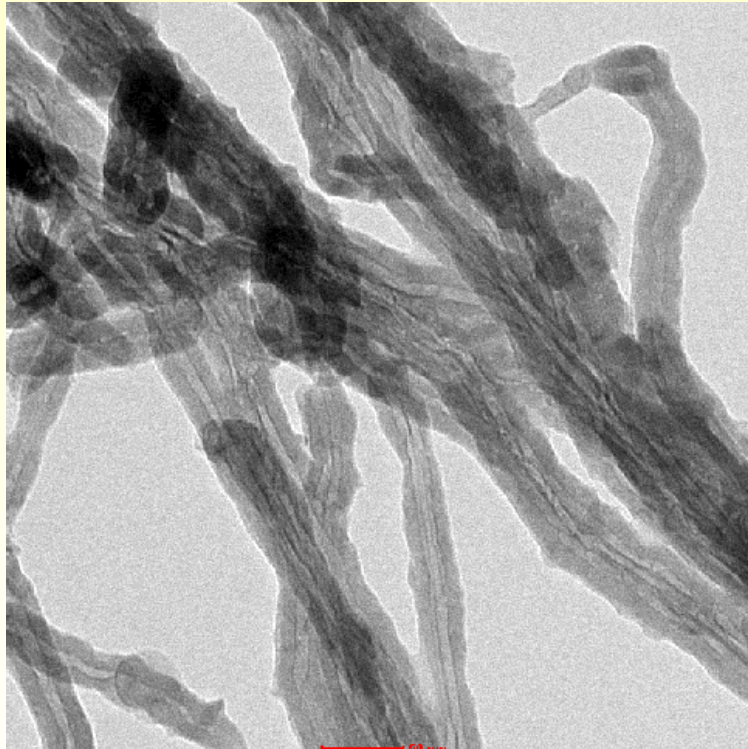
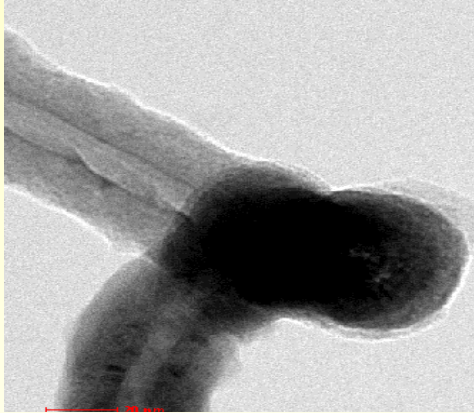


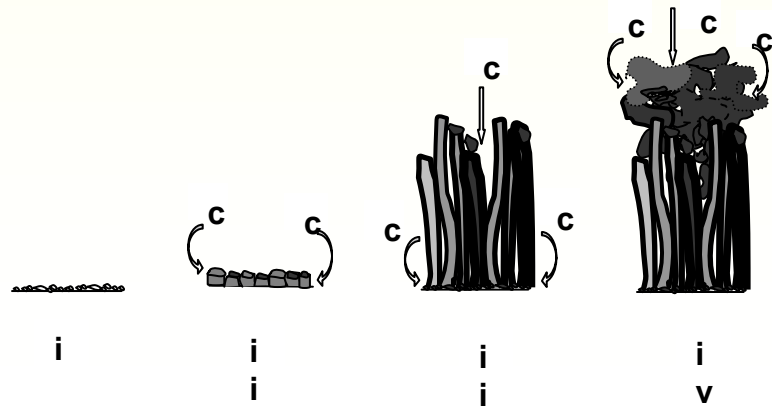
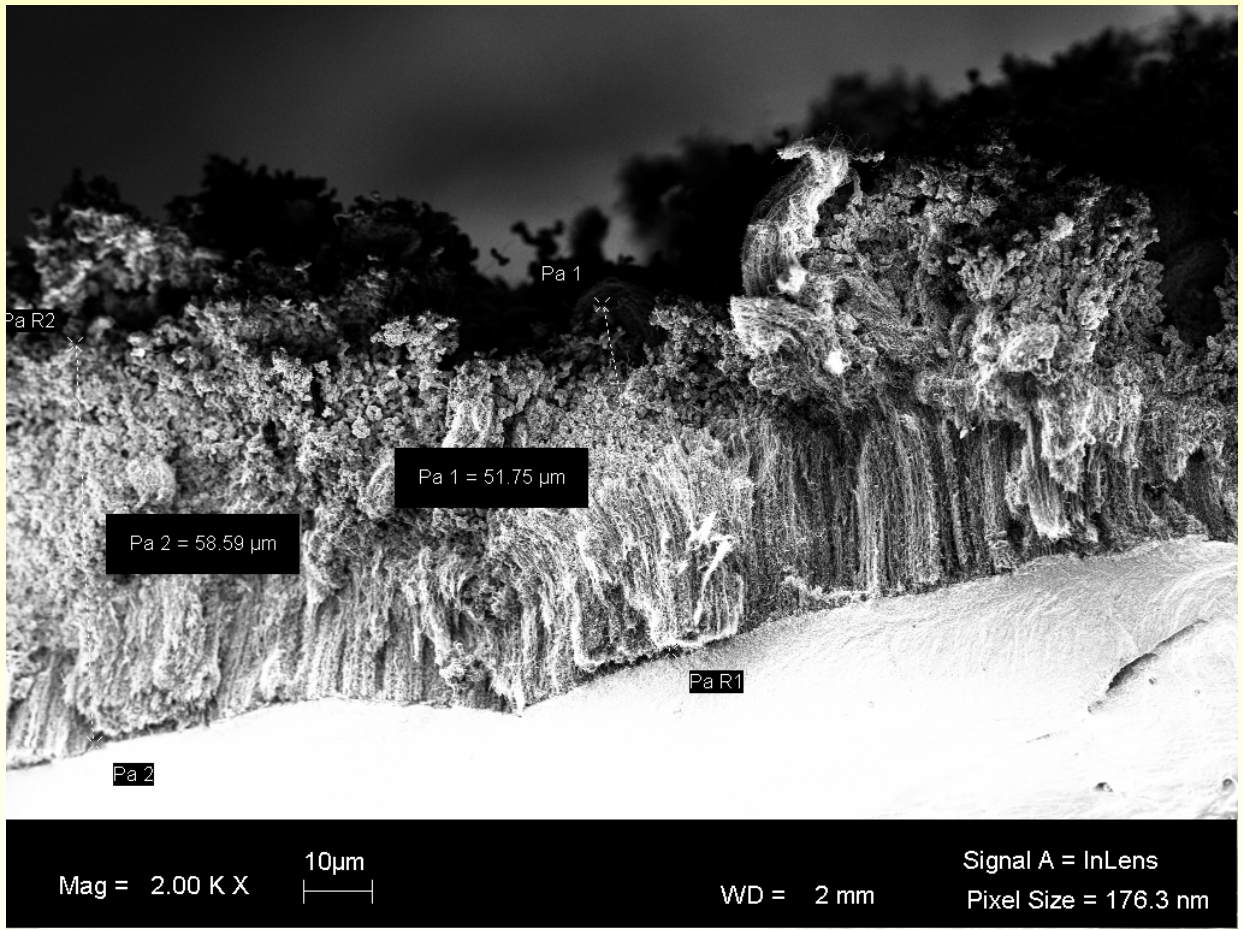
700 C Treatment

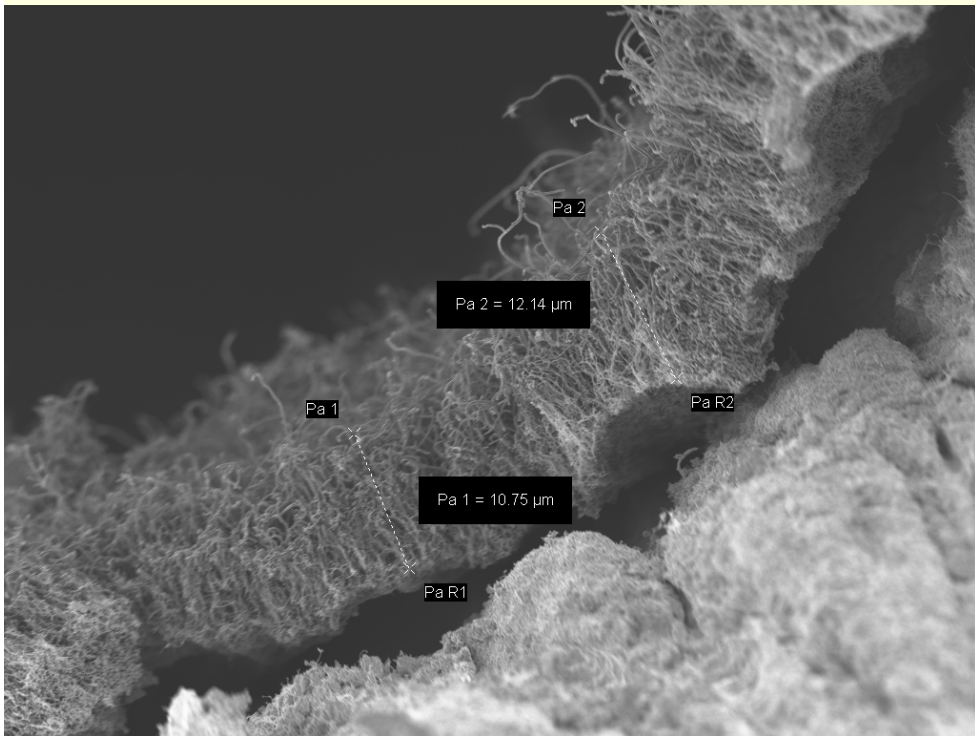
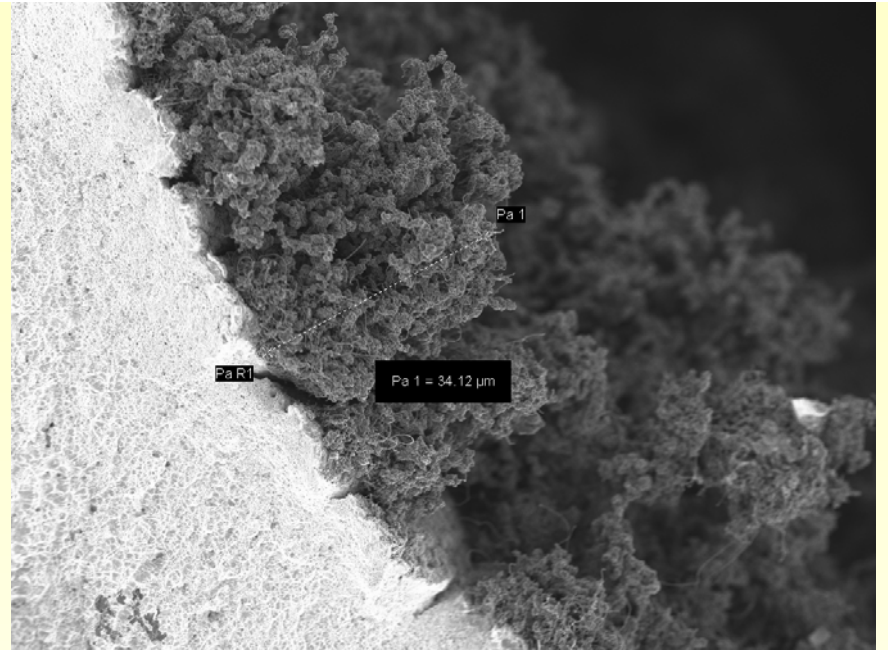
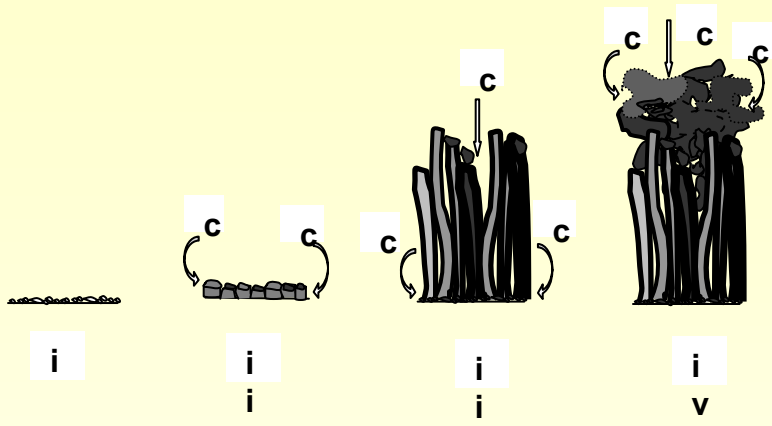


Electrodeposited Cobalt

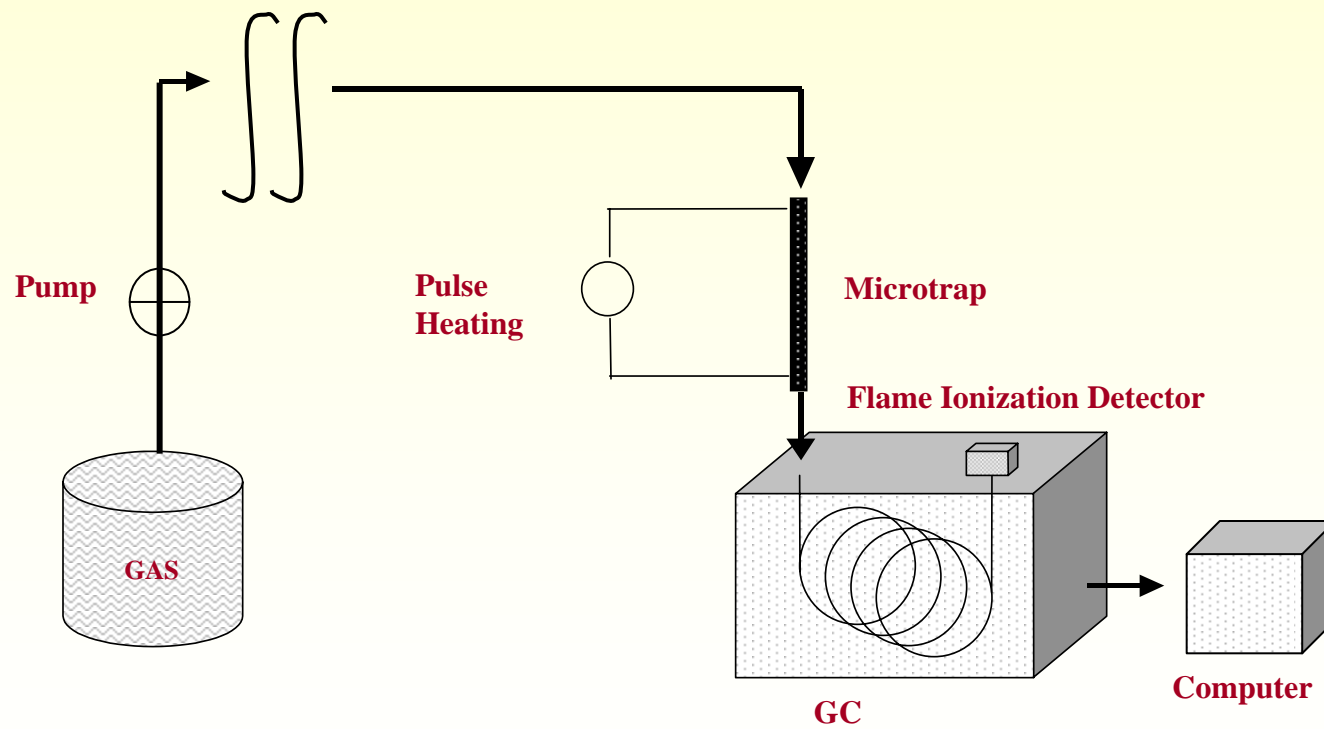


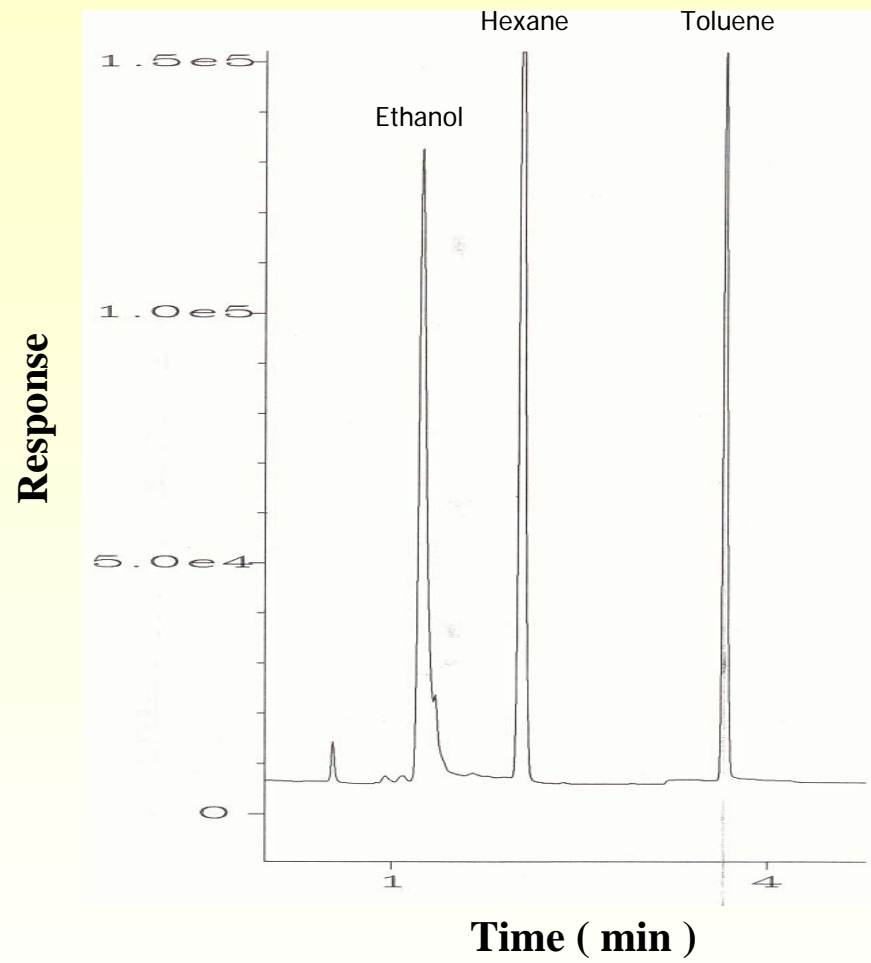
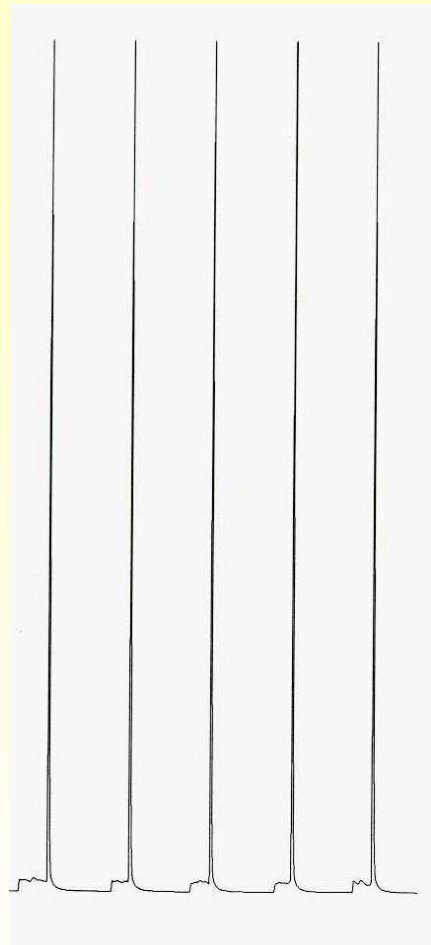






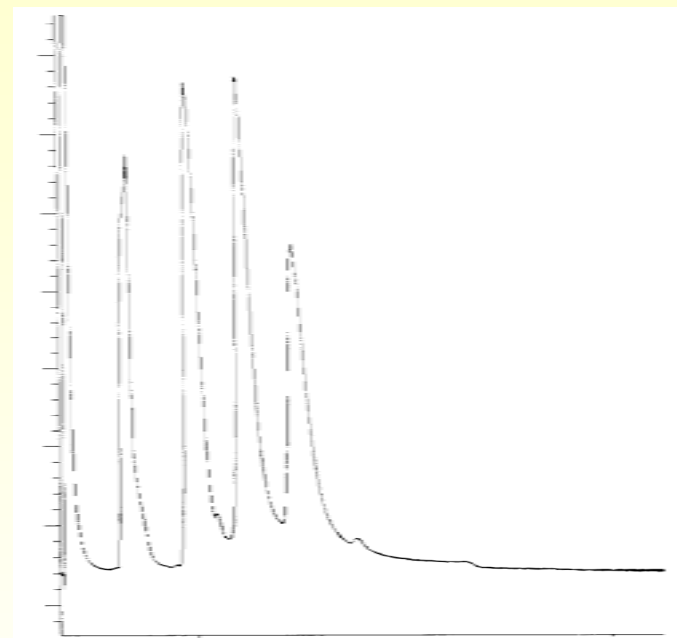
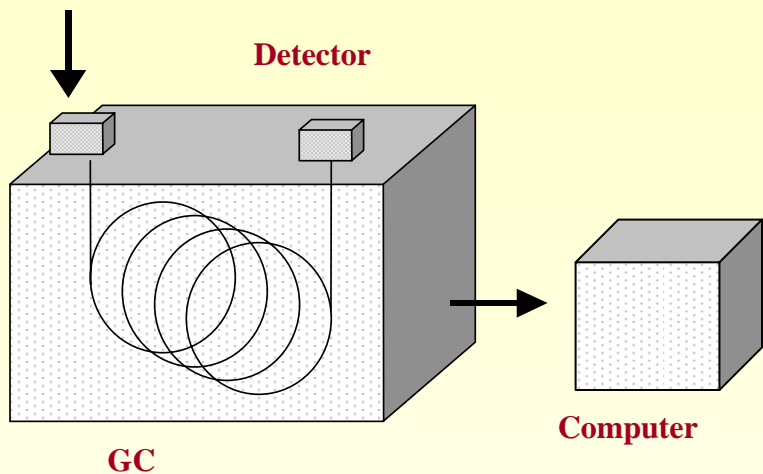
CNT-Microtrap



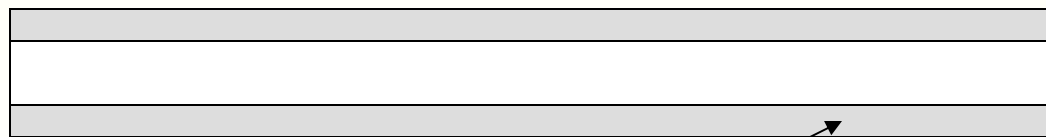
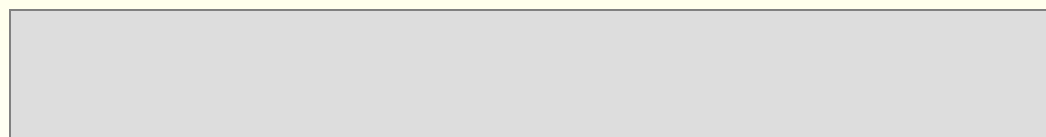


C. Saridara, R. Brukh, Z. Iqbal and S. Mitra
Anal. Chem. 2005

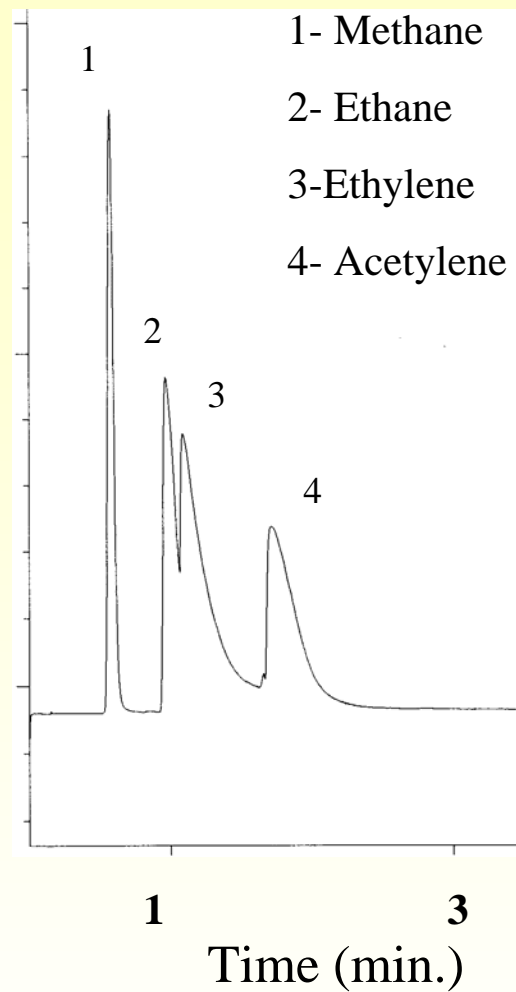
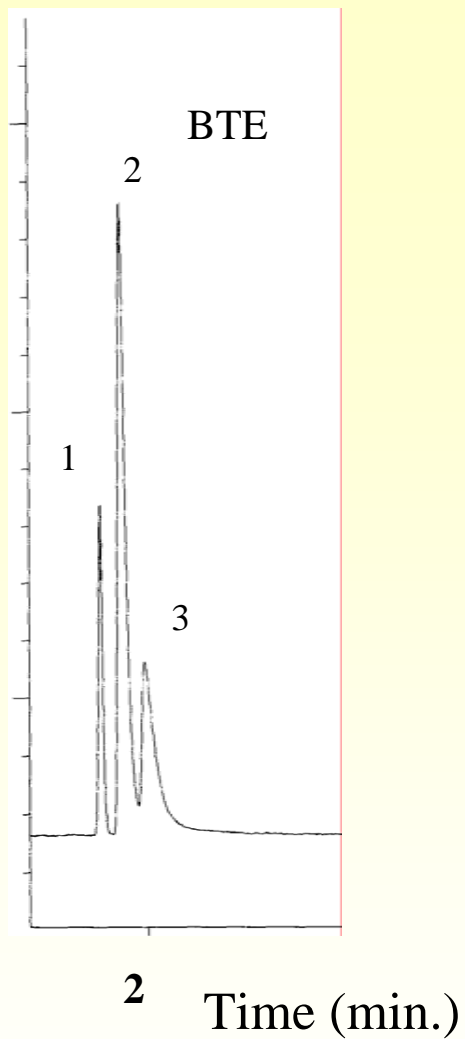
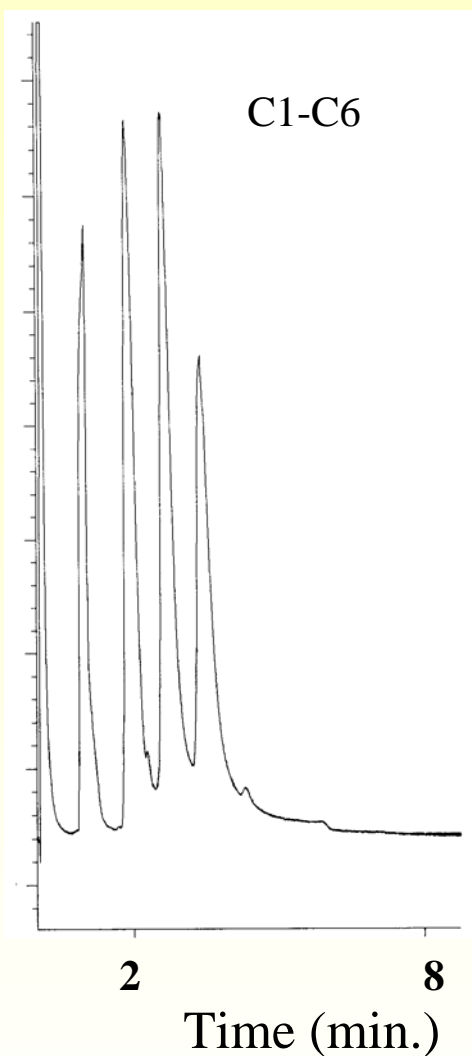
Gas Chromatography



Columns

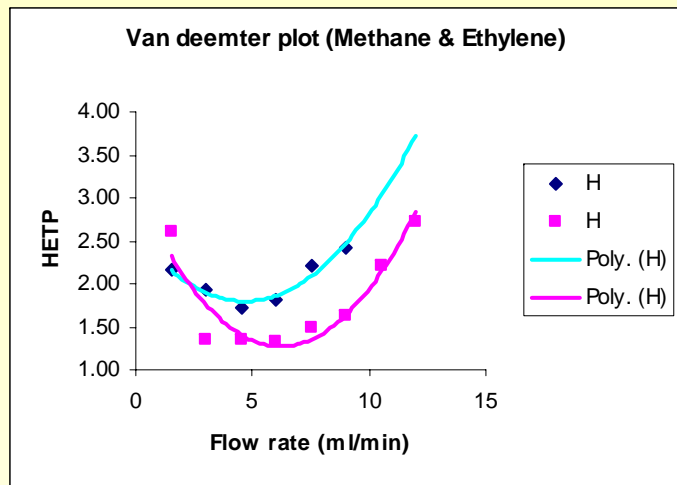


CNT

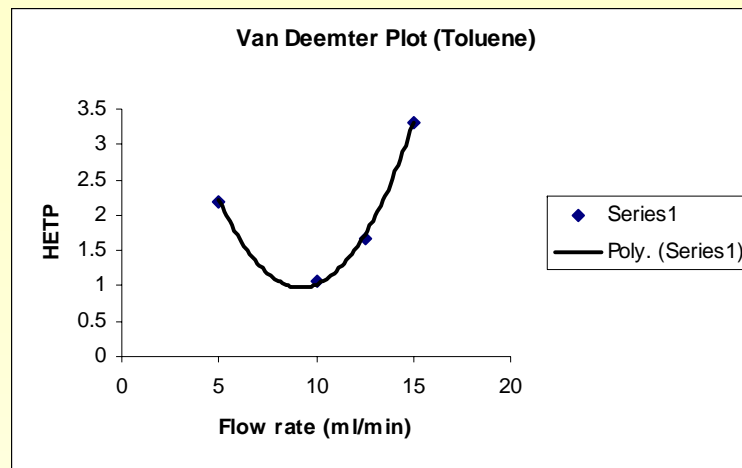


1500-2000 plates/m

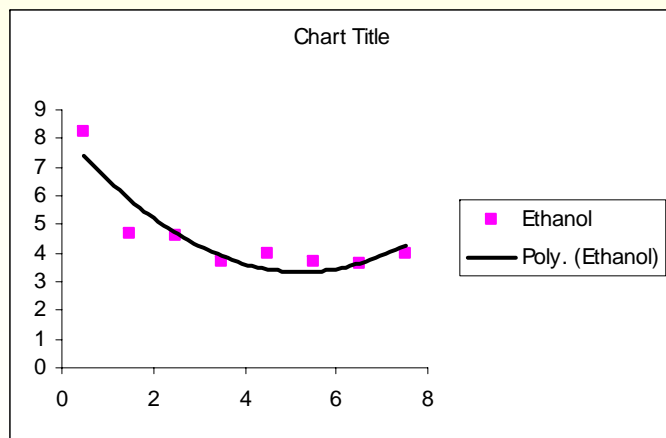
C. Saridara and S. Mitra, *Anal. Chem.* 2005



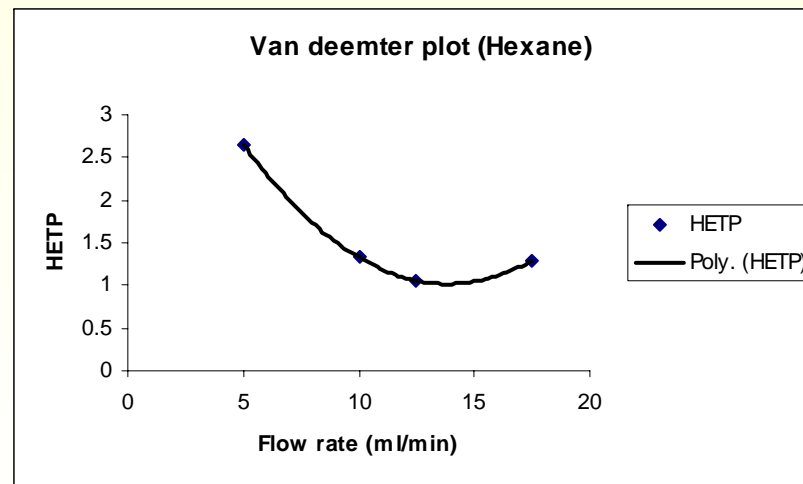
Methane and ethylene in C₂H₄-CVD



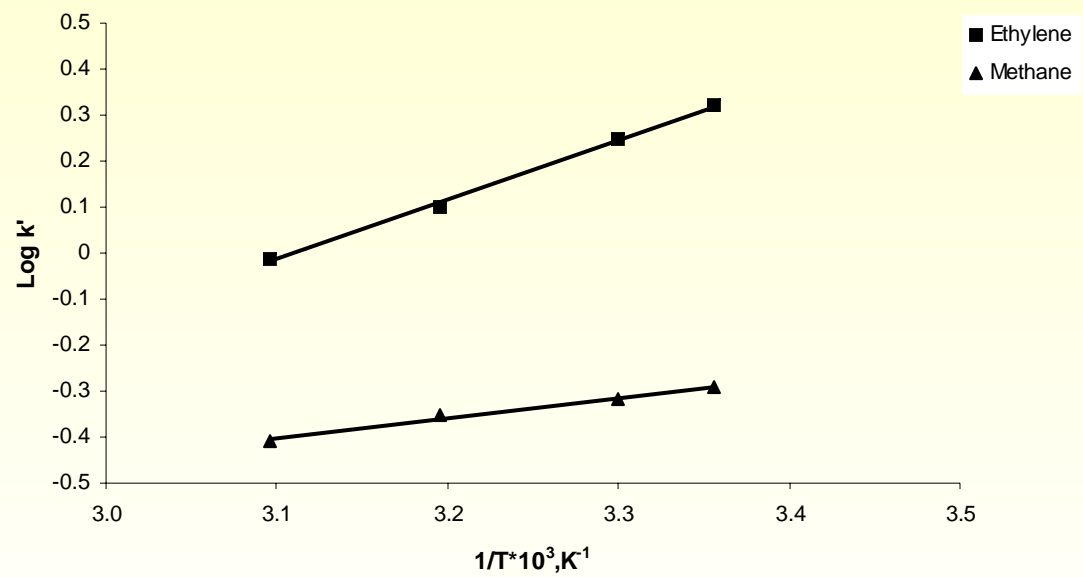
Toluene in C₂H₄-CVD



Ethanol in CO-CVD

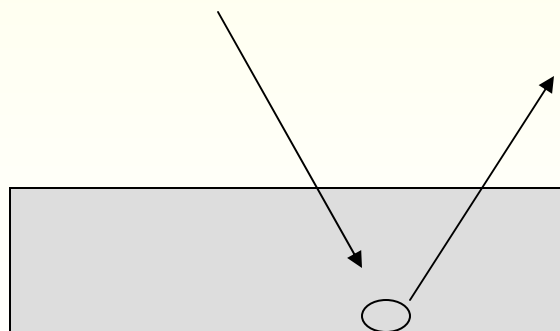
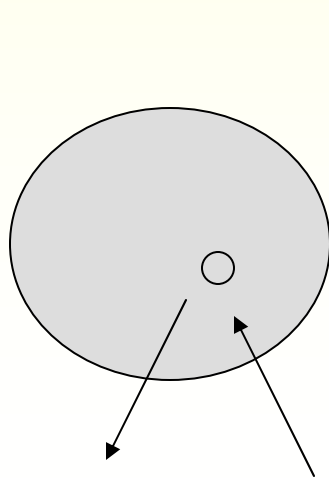


Hexane in C₂H₄-CVD



Potential Advantages

- **CNTS offer:**
 1. **High capacity in the open tubular format**
 2. **Thermal stability at high temp.**
- **Fast desorption**
- **Fabrication by self-assembly**
- **Nanotubes fine-tuned to specifications.**



NJIT