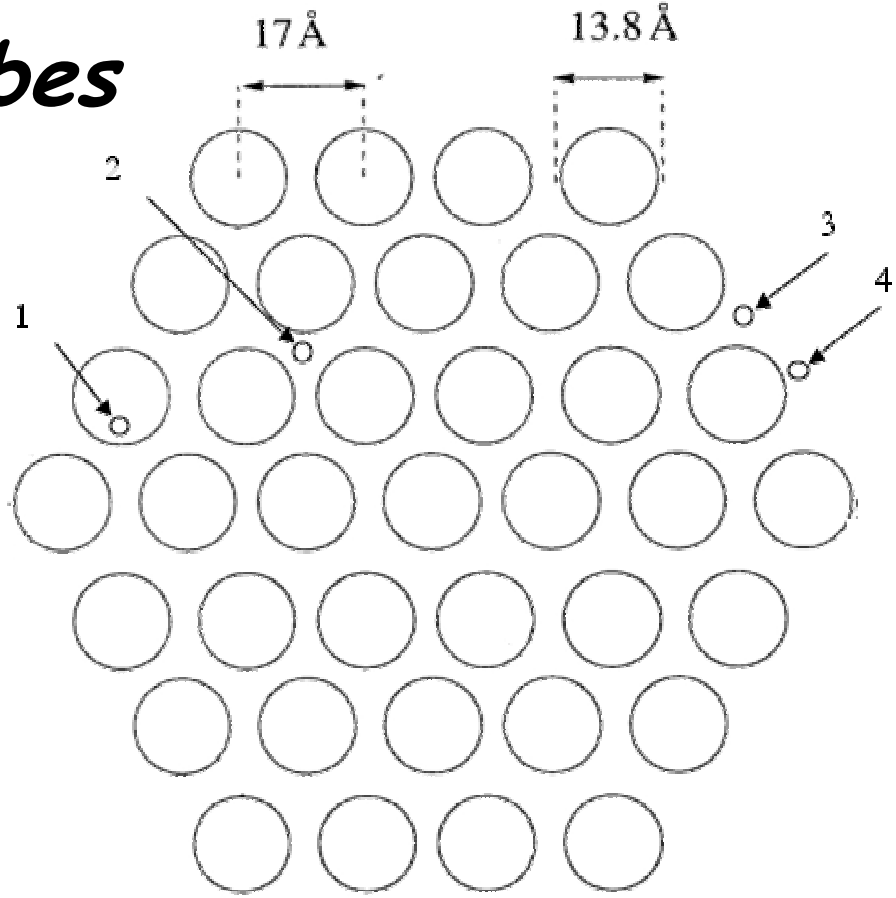
Adsorption of H_2 on Carbon Nanotubes

An exploration into the world of little bity stuff and
1 and 2 dimensional solids at really cold temperatures

By Devin Holmes

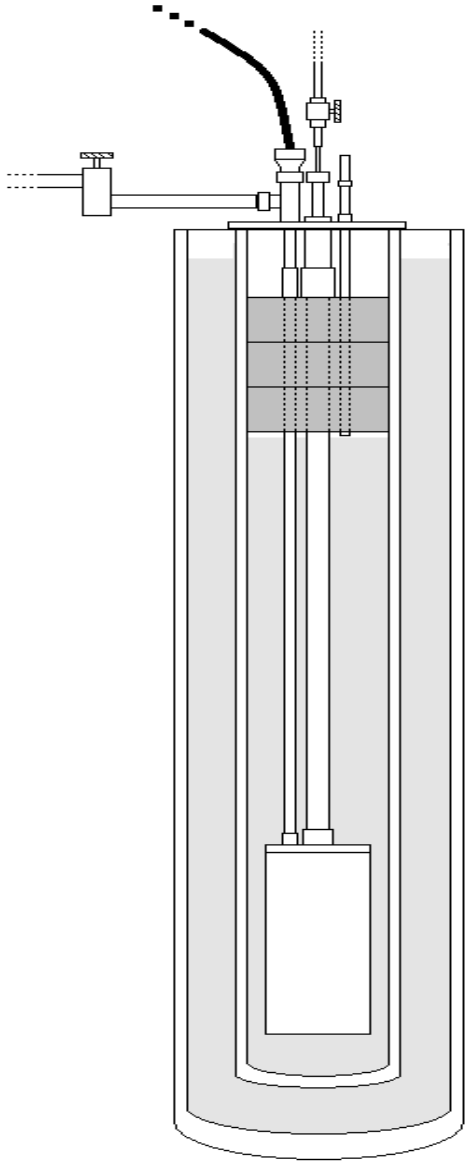
The Tubes

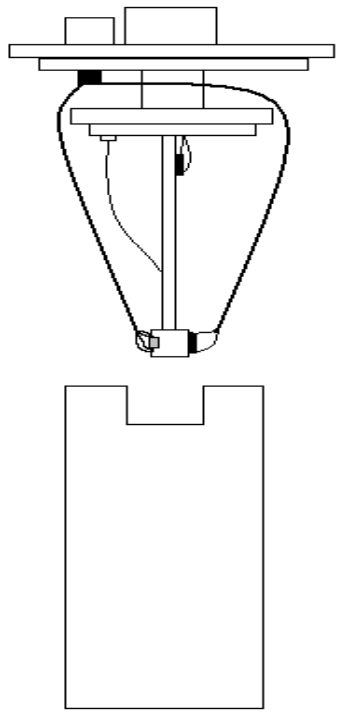


Close-packed arrangement of SWNTB showing 37 tubes/ bundle

(adapted from M.M. Calbi et. al. *Rev. Mod. Phys*., **73**, 857 (2001)**)**

The Apparatus





The Procedure

- ✓ Take Data
- ✓ Calculations:

  Pressure Correction

  Volume Adsorbed

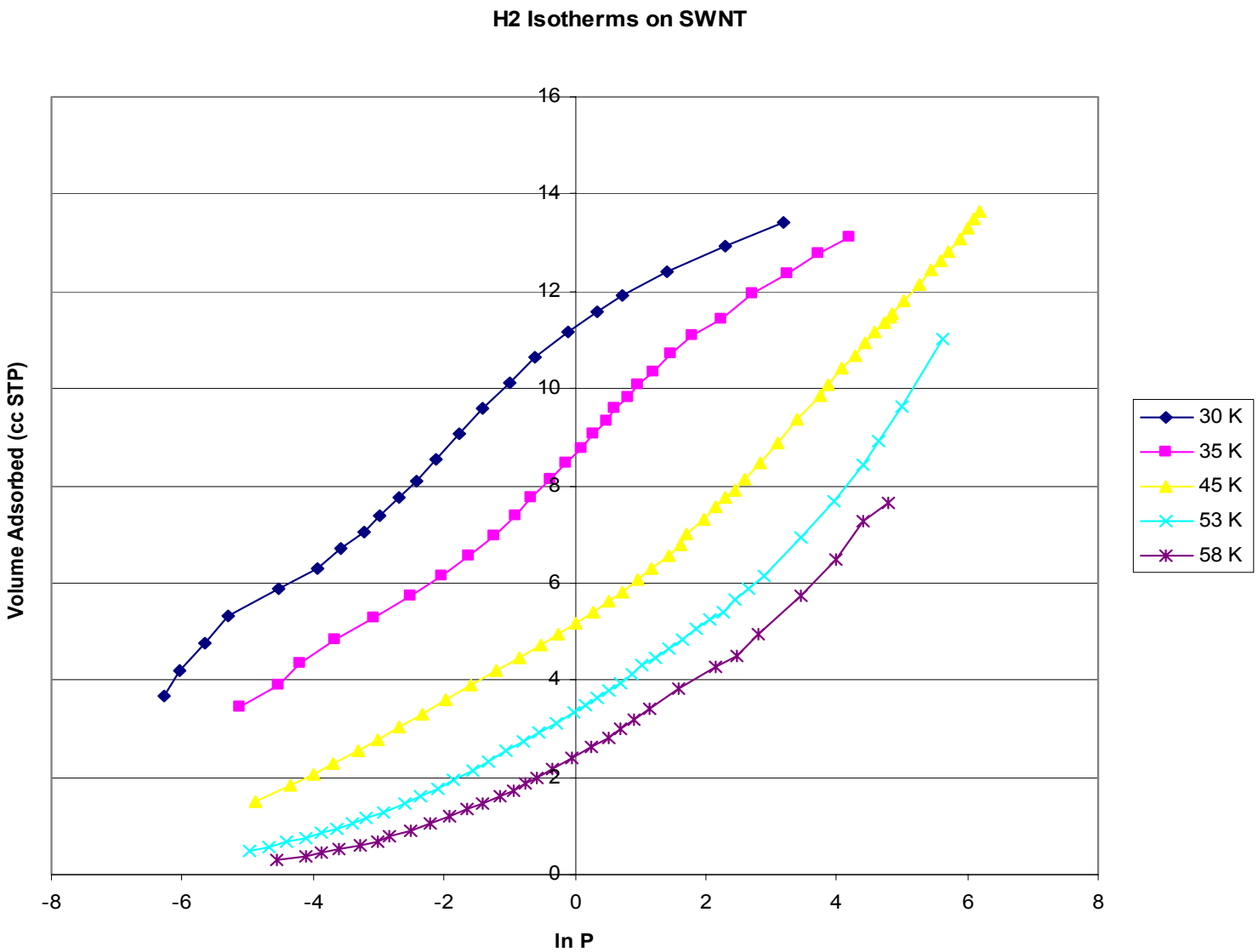
  Transpiration Effect

  Isosteric Heat

  Random Spreadsheet Data Manipulation

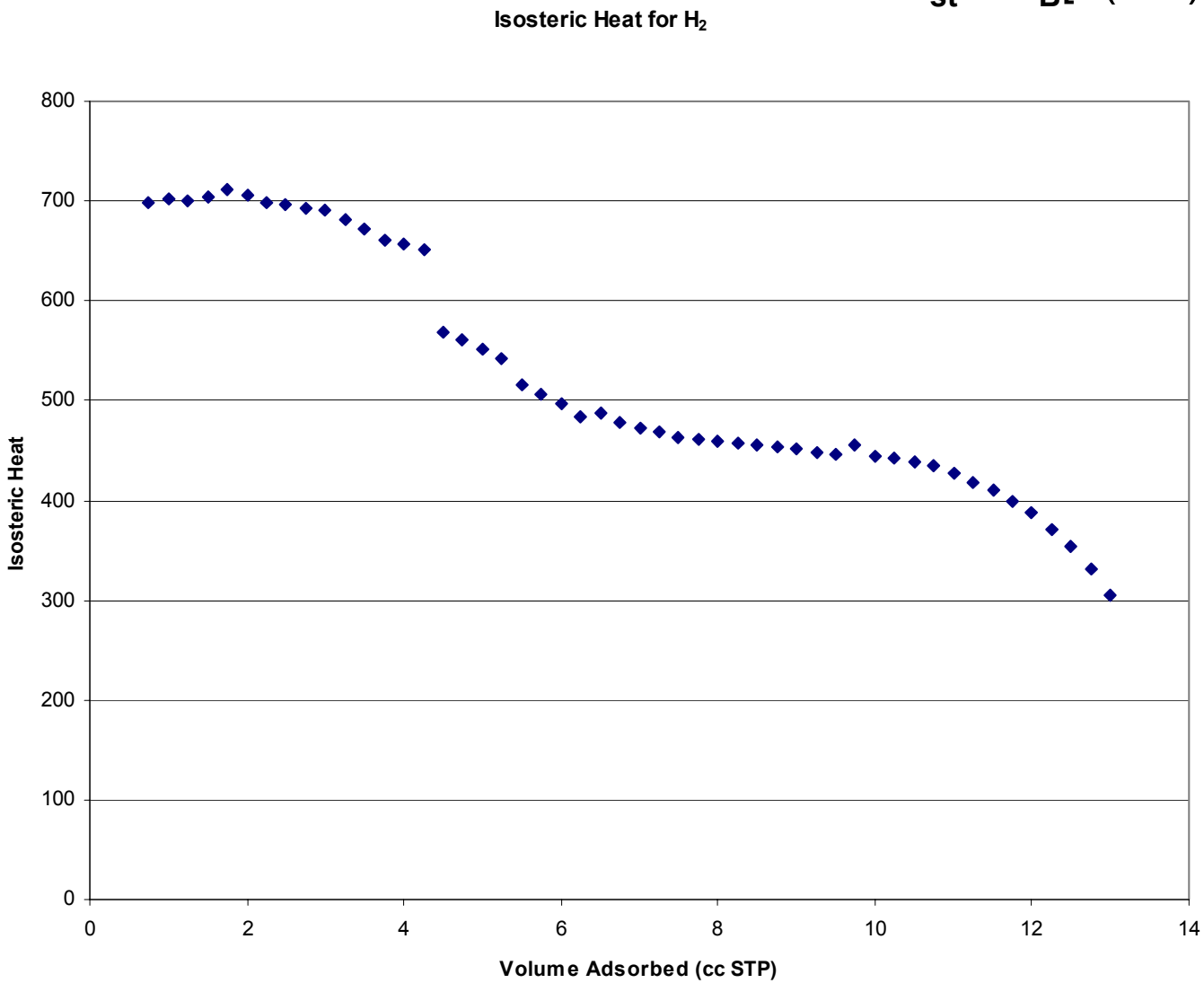
- ✓ Figures

Isotherms


H2 Isotherms on SWNT
Volume Adsorbed (cc STP)
16
14
12
10
8
6
4
2
0
-8
-6
-4
-2
0
2
4
6
8
ln P
30 K
35 K
45 K
53 K
58 K

Isosteric Heat

$$Q_{st} = -k_B[d(\ln P)/d(1/T)]$$



Heat Capacity