CHAPTER 8

Tables

These tables are from

Understanding the properties of matter

by Michael de Podesta.

Table 8.1 Data from Example 8.1. The table shows the mean radius of each ring in Example 8.1, and summarises the data for the solid, liquid and gas examples. For each ring, it divides the number of circles (atoms) found in each ring by the approximate area of that ring, $2\pi r\Delta r$. The units are such that the width of each ring $\Delta r = 1$. This is an approximation to the radial density function for the substance. The results for the solid and liquid case are plotted in Figure 8.6.

		Solid		Liquid		Gas	
Ring	**Radius**	N	$n = \frac{N}{2\pi r\Delta r}$	N	$n = \frac{N}{2\pi r\Delta r}$	N	$n = \frac{N}{2\pi r\Delta r}$
1	1.5	0	0	0	0	0	0
2	2.5	0	0	0	0	0	0
3	3.5	6	0.273	4	0.182	0	0
4	4.5	0	0	2	0.071	0	0
5	5.5	0	0	1	0.029	0	0
6	6.5	12	0.294	4	0.098	2	0.049
7	7.5	0	0	6	0.127	1	0.021
8	8.5	0	0	3	0.056	0	0
9	9.5	12	0.201	6	0.101	3	0.050
10	10.5	6	0.091	6	0.091	1	0.015
11	11.5	0	0	7	0.097	1	0.014

Table 8.2 The transition temperatures of some substances which form liquid crystal mesophases.

Ethyl-anisal-p-aminocinnamate:

$$\text{Crystal} \xleftrightarrow{83\ ^\circ\text{C}} \text{Smectic } B \xleftrightarrow{91\ ^\circ\text{C}} \text{Smectic } A \xleftrightarrow{118\ ^\circ\text{C}} \text{Nematic} \xleftrightarrow{139\ ^\circ\text{C}} \text{Liquid}$$

Cholesterol benzoate $C_{34}H_{50}O_2$: relative molecular mass 491

$$\text{Crystal} \xleftrightarrow{146\ ^\circ\text{C}} \text{Cholesteric} \xleftrightarrow{178.5\ ^\circ\text{C}} \text{Liquid}$$