

**Homework 2. Spring 06**

**Due date:** Monday, January 30, 2006

**All Students**

Do: Q 4.4 (log-probability paper is available on our web site), Q 4.7

Do also:

Q (i)

Determine the GSD and mean of the distribution shown in Figure 4.12 (see eq. 4.46).

Assume that  $N = 10,000$  particles per  $\text{cm}^{-3}$ . Plot the distribution in three ways (y-axis vs. x-axis):  $dN/d(d_p)$  vs  $d_p$ ,  $dN/d(\ln d_p)$  vs  $d_p$  and  $dN/d(\ln d_p)$  vs  $(\ln d_p)$ .

Begin by completing the Table below in a spreadsheet. The following equations will be useful (cf. Hinds eq. 4.41 and 4.42):

$$\frac{dN}{d \ln d_p} = \frac{N}{(2\pi)^{1/2} \ln \sigma_g} \exp \left( -\frac{(\ln d_p - \ln \bar{d}_{pg})^2}{2 \ln^2 \sigma_g} \right)$$

$$\frac{dN}{dd_p} = \frac{N}{(2\pi)^{1/2} d_p \ln \sigma_g} \exp \left( -\frac{(\ln d_p - \ln \bar{d}_{pg})^2}{2 \ln^2 \sigma_g} \right)$$

$D_p$ ( $\mu\text{m}$ )	$n_N(D_p)$	$n_N^e(\ln D_p)$	$\ln D_p$
2			
4			
6			
8			
10			
12			
14			
16			
18			
20			
22			
24			
26			
28			
30			
32			
34			
36			
38			
40			

**Graduate Students**

Do Q 4.10