

Polymer Course – HW #1

Due date: **Monday, Sept. 29th, 2008**

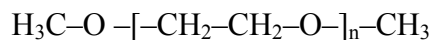
1. Problem #8 from Chapter 1 of Lodge.

Now you are free to choose your own “4-8 family members, friends, neighbors, etc.” as indicated in the problem. Or, if you like, you may choose to use the same people as are used in the solution manual (no joke).

<u>Character</u>	<u>Mass (kg)</u>
Jean Gray	52
Rogue	54
Bruce Banner	58
Elektra	59
Spider-Man	75
Magneto	86
Wolverine	88

2. Problem #14 from Chapter 1 of Lodge.

Poly(ethylene oxide) (PEO) with methoxy end groups at each terminus:



Note for non-chemists: methyl groups are $-\text{CH}_3$ and methylene groups are $-\text{CH}_2-$

3. Problem #15 from Chapter 1 of Lodge.

4. Crud Chemicals is using GPC to analyze polystyrene (PS, $M_n = 150,000$) samples plasticized with a low molecular weight mixed hydrocarbon oil, $M_n = 400$. Sketch what you think a GPC curve for an unplasticized (i.e., neat PS) and plasticized material would look like.

5. Problem #1 from Chapter 2 of Lodge.

6. Draw the chemical structure of nylon-6,6 and nylon-3,4. Explain the naming convention.

7. Problem #4 in Chapter 2 of Lodge.

8. Problem #7 in Chapter 2 of Lodge.

9. Problem #1 in Chapter 3 of Lodge.

10. Problem #2 in Chapter 3 of Lodge.

What does this tell you about the polymerization mechanism of PMMA and PS?

11. Problem #5 in Chapter 3 of Lodge.