Chemistry 825 - Spring 1997

Final Exam, Take Home, Due Friday June 6th at 4 PM

Name:_____ Student Number:_____

This is an open book take-home exam. You have one week to work on the exam. You may use your texts or any other references to answer the questions but do not talk to one another about them. Clearly show all of your work and make sure to **answer in your own words**. Please limit your answer for each question to the equivalent of one typed page or less (i.e. under 250 words). Use hand drawn diagrams, graphs, etc. to illustrate your points. If you have any questions, please ask me for clarification.

Question Number	Points
1	/25
2	/25
3	/25
4	/25
TOTAL	/100

1. (25 points in total) You have just prepared a new Gel Permeation Chromatography column. Briefly describe the principles of how such a column works (one short paragraph) and the information it gives. Briefly describe how a membrane Osmometer works (one short paragraph) and the information it gives. Then, describe how you would calibrate the new GPC column using the Osmometer.

2. (25 points in total) Briefly describe how an IR spectrometer works and then explain how it could be used, and the information it would give, when used to characterize a copolymer of polystyrene and methyl methacrylate.

3. (25 points in total) Compare and contrast the advantages and disadvantages of using Optical Microscopy and Scanning Electron Microscopy to characterize polymer morphologies.

4. (25 points in total) You are given a sample of polyethylene by your boss. She asks you to determine the distribution and frequency of alkyl branches on the backbone and the distribution of chain lengths of these branches. Describe the technique or techniques you would use to answer her question.