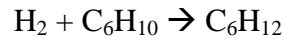


CHEG 251: Homework Assignment #1**Due: January 26th, 2007**

1. **Problem 1-17_B** from Fogler, 4th Edition
2. **Problem 3-4_A** from Fogler, 4th Edition
3. The rate of reaction was measured experimentally for the following non-elementary, liquid-phase chemical reaction:



C_A (mol.L ⁻¹)	C_B (mol.dm ⁻³)	$-r_A$ (mmol.s ⁻¹ .L ⁻¹)
0.1	0.003	3.59
0.3	0.002	4.95
0.2	0.003	5.93
0.3	0.003	7.45
0.5	0.003	8.35
0.3	0.005	11.02
0.1	0.003	12.84
0.3	0.007	16.25
2	0.003	16.14
0.3	0.009	17.66
0.3	0.01	22.80
0.3	0.013	34.00

Assuming a Power-Law form of the rate expression, $-r_A = kC_A^n C_B^m$

- (i) determine the order-dependency of this reaction upon hydrogen (A) and cyclohexene (B) concentrations. **SHOW YOUR WORK.**
- (ii) Generate a Parity Plot, to demonstrate the accuracy of your rate expression. Plot the experimentally reported reaction rates vs. the corresponding fitted/calculated rates.

HONORS SUPPLEMENT:

4. **Problem 1-16_B**: I recommend *Industrial and Engineering Chemistry Research* (I&EC Res), *American Institute of Chemical Engineering Journal* (AIChE J) or *Chemical Engineering Science* (Chem Eng Sci), or *Lab On A Chip*, but feel free to explore everything the library has to offer.