

IR of Acetylene (30 points total)

- (4) Mid-Rotation Assignment
- (4) Lab Technique - safety, preparation, in-lab participation, notebook
- (14) Presentation
 - (4) Logical flow, use of visual aids
 - (10) Explanation of Data analysis showing clear understanding and ability to intelligently answer discussion questions.
- (8) Results Abstract and Calculations
 - Quality and accuracy of results, correctness and completeness of calculations, correct error analysis for results. Clarity of written results and calculations.

Intermediate Analysis Assignment

You will have to turn in a short initial analysis of the data you have collected. The goal is to make sure that you have begun assimilating and implementing the analysis and theory portion of the lab.

-You should hand in to the TA's a cursory vibrational analysis of C₂H₂, C₂D₂, and C₂HD. List all the vibrational transition frequencies and intensities in each spectrum. Identify which peaks in each spectrum belong to impurities (C₂H₂ peaks in the C₂D₂ spectrum for instance). Using the DFT calculations, assign all the major peaks - those that are big enough to have clearly resolved rotational structure.

-You should also perform a complete rotational analysis of C₂H₂. This will include using the relative intensities and such other information to assign R(0) and P(1) and linear regression to determine the constants B₀, B₁, B_e, alpha_e (and D_e if possible) etc. (All with error analysis, again)

-The format of the assignment should be typed text. It should read like a homework assignment: showing and describing the steps you took while doing the peak assignments and calculations. A logical, easy to follow sequence is expected. Equations, graphs, diagrams, tables, etc. need not be computer generated, Just neatly penned in. (Suggestion: Do these things on separate pen-only pages, clearly label them, and refer to them in your typed text)

Due: Tuesday Sept. 28 in class. Hand in to the TAs.

Presentation

We will be giving you a set of sample questions you might be asked during your presentation when you hand in the intermediate analysis.

Final result abstract

You should hand in a summary of your methods, calculations and results after the presentation.

-The main part of the document should be 3-5 of typed text pages, including descriptions of the methods you used to obtain your results and a summary of the results. Your actual calculations, spreadsheets, tables, results, and a sample error calculation should be attached. These need not be computer edited, but should be neat, clear, thorough and logical. No need for introduction, background, conclusion, etc... But SHORT discussions of results as you derive them are encouraged. The lab manual describes the calculations you will be expected to have done for the presentation and final abstract.