

HW Number 6, Due May 16th

1. You are given a one inch cube of a material. You are told that it is very dense, the main phase is a ceramic oxide and has good "properties" due to the addition of 0.5 atomic % of a metal and 5 atomic % of a fluoride. Starting from sample preparation, how will you determine what the sample is in a systematic fashion? Points will be deducted for a "stream-of-consciousness" answer that gives a shopping list of techniques; the best answer will be a carefully chosen combination of techniques with details about what would be tried first and why.

2. For question 1., assuming that your time costs \$35 per hour and using the instrument rates at www.nuance.northwestern.edu/epic/reservation-policy-and-rates/index.html with an overhead of 50% on the instrument charges, estimate the total cost to your supervisor of your answer to question 1, clearly stating all assumptions that you make.