

PROBLEM SET 5, Phcg 631

- 1a) Explain briefly the NMR experiment HETCOR. 1b) And why is not a primary choice for assessing heteronuclear information?
- 2) What are the benefits in collecting a ^{13}C -related NMR spectrum of a compound with a poorly resolved 1D NMR spectrum?
- 3a) What are the pros and cons of working with heteronuclear experiments through indirect detection? 3b) And how to overcome the issues arisen from multiplicity?
- 4) Explain the different aspects between HSQC, HMQC and HMBC?
- 5) Explain how the INEPT method can enhance sensitivity in heteronuclear experiments.
- 6) What are the benefits of using DEPT coupled to the heteronuclear experiment?
- 7) What are the pros and cons of the ^{13}C - ^{13}C INADEQUATE method?
- 8) Explain the following order of NMR sensitivity based on the experimental aspects and isotopic aspects for each case: 1D ^1H NMR > 2D ^1H - ^1H NMR > 2D INEPT-containing ^1H - ^{13}C NMR > 2D INEPT-absent ^1H - ^{13}C NMR > 2D ^1H - ^{13}C direct detection > 2D ^{13}C - ^{13}C NMR.
- 9a) Why is important to understand the dynamic behavior of functional molecules? 9b) How to study this dynamical behavior through NMR?
- 10) Cite the two ways to measure T_2 ?
- 11) Explain experimentally CPMG.
- 12) Explain experimentally inversion recovery.