

Suleiman Mousa, List of Minor Corrections from Internal and External Examiners

- 1) **Please add an acknowledgements page, then listing recent publications and conferences (oral/poster presentations) attended is and then a page listing abbreviations. Also, please remove blank pages. Also include list of Tables and figures.**
 - a. Page iii – added acknowledgement page
 - b. Page ii – added List of Publications and Presentations
 - c. Page ix – added Nomenclature and List of abbreviation
 - d. All blank pages removed
 - e. Pages xi to xv – Added list of figure and table
- 2) **Page 4, refer to figures in main text, and check throughout thesis for consistency.**
 - a. I have now referred to **Figure 1.1** in the text on page 5. Also removed Figure 1.2 which showed methanol production process (P&ID)
- 3) **Page 50, if the sample is frozen ‘quickly’ is a vague term, is it seconds or minutes for freezing? Add Ramp rate of cooling and time required for freezing.**
 - a. I have now removed the word quickly and replaced with: if the sample is frozen to -80°C (which took 4 minutes on the DSC machine used)
- 4) **Page 60, how did you determine bulk density from helium pycnometry? Change bulk density from helium pycnometry in **Table 3.1** to mercury porosimeter.**
 - a. Now removed helium pycnometry from table 3.1 and replaced with the bulk density was obtained from mercury porosimetry.
- 5) **Page 62, how do you determine the sample tube's warm and cold free space? Add warm and cold free space of blank tubes was measured before analysis and used helium pycnometry (skeletal density) and sample weight to subtract the volume of the sample. Allowing the disabling the conventional warm and cold free space method on low pressure gas sorption instrumentation.**
 - a. Now added the suggested above text on measuring tube's warm and cold free spaces. The warm and cold free space of blank tubes was first measured before analysis using helium pycnometry (skeletal density) and sample weight to subtract from the volume of the sample. This allows disabling the conventional warm and cold-free space method on low-pressure gas sorption instrumentation.
- 6) **Page 68, add Dragonfly software was used to construct/process images in figure 3.5 legend.**
 - a. Now added Dragonfly software was used to reconstruct and process the images in **Figure 3.3** caption.
- 7) **Page 89, change column heading in Table 3.5 to post mercury intrusion.**
 - a. The 5th column on **Tables 3.5 and 3.6** have now changed to “MTC for post Hg k(/s)”
- 8) **Page 142, insert the equivalent pore size from the maximum mercury porosimetry pressures in figure 5.10.**
 - a. Now added the equivalent pore size from mercury on **Figure 5.10 a-d**

- 9) **Page 163, what is the temperature for preparing and humidifying the samples?**
Please add the temperature using an oven to maintain temperature over 7 days. In addition, insert % weight loss after stopping MIP for moisture equilibrated samples at 1000 mmHg, to prove water is being held within the sample at this pressure. Also search for the word 'bowl' in the thesis and change this to sample 'bulb' for the mercury porosimetry penetrometer.
- The temperature for preparing and humidifying the sample was 20°C which is now added
 - % weight loss after stopping MIP is now added which was less than 1%.
 - I have now replaced the word "bowl" with bulb for the mercury porosimetry
- 10) **Please put future work on separate page and retitle 'Future Work'.**
- Future retitled "Future Work" and placed on a separate page.
- 11) **Page 47, Thompson is spelt with a 'p', but later on page 48 it is Thomson without a 'p', please check and use consistent spelling.**
- Thomson is the correct spelling. I have replaced all the Gibbs-Thompson spellings with Gibbs-Thomson
- 12) **Page 122, Figure 4.15, Figure (e) is labelled twice in the caption, so there is no label of Figure (f) please correct this typo error.**
- I have now corrected this typo and replaced Figure (e) label with figure (f)
- 13) **Page 164, Please add definitions of abbreviations used on the figure 6.3, e.g. ROA and ISO.**
- I have now added the definition of the abbreviation used on the figure on the caption of **Figure 6.3**
- 14) **Throughout Chapter 5, the page numbers in the header line are obscured because of the long title of that chapter. Please correct.**
- Now shortened chapter 5 title by removing the word "pellet" from title, and text doesn't cover the page numbers.