7.7ppm region leaves either an error or a shared peak that was not readily visible as the only logical explanations for such a discrepancy. The experimental NMR peaks for TPP are -2.695, 7.806, 8.270, 8.899, which with the exception of a single peak is very similar to the literature values for TPP which are -2.79, 7.77, 7.75, 8.28, and 8.85.[3] Just as in the Ni-TTP literature contrast, there is also a missing peak on this NMR as well. This nonexistent peak is a part of the larger peak present at 7.806 (integration value=12), which consequently is near the shift site of the peak that was not present in the experimental NMR spectrum. The negative peak is the pyrrole N-H and is consequently present in the TTP spectrum and not in the Ni-TTP spectrum, suggesting that the intended replacement of the N-H bonds with Ni-N bonds took place. An upfield shift took place upon the addition of the Nickel to the TTP, as was expected due to the formation of Ni-N backbonds. The principles behind this shifting are the same principles behind the differences in the absorption spectra of TTP and Ni-TTP.

The percent yield of TPP is relatively low at 15.2%, suggesting that there was incomplete recrystallization. Despite how low this number seems, the literature value for percent yield of TPP with a similar synthesis procedure was an average of 23%.[2] This means that it is normal for there to be large loss of product or incomplete reaction to tetraphenylporphyrin. The percent yield of 83% for Ni-TPP is fairly high, indicating that there was not widespread loss of product. These percent yield values are reasonable, suggesting in conjunction with the other physical data that there were no major errors compromising the result of this experiment. The spectral data suggests that the intended syntheses, both of tetraphenylporphyrin (TPP) and nickel(II) tetraphenylporphyrin. In addition, the magnetic susceptibilities of the copper and zinc porphyrins aligned with the orbital theory behind the changes that were observed in the physical properties upon the addition of Nickel to the porphyrin complex.[1,2,3] This data analysis confirms the intended synthesis of both tetraphenylporphyrin and nickel(II)tetraphenylporphyrin, as well as the proper characterization of these two compounds and two related metalloporphyrins (Zn and Cu).

Questions: