



# Progress Towards the Synthesis of 2-Benzyl-naphthalene

Anthony Lemieux, Holly Guevara, Alka Prasher

Al2007@wildcats.unh.edu; Parsons Hall, 23 Academic Way, Durham NH 03824

## Introduction:

The desired compound, 2-benzyl-naphthalene synthesized from phenylmagnesium bromide and 2-naphthaldehyde, is a novel compound that has many synthetically useful applications in industry. The uses of this molecule include microcapsulating dyes in pressure-sensitive copying when used in a benzyl-naphthalene/hexylbenzene solvent combination to increase pressure-development speeds.<sup>1</sup> 2-Benzyl-naphthalene is, moreover, used in the alkylation or benzylation of lubricating oils to improve the radiation stability of lubricants used in power plants.<sup>2</sup> The compound can also be used for gas chromatography (GC) and mass spec analysis of pyrolyzed taiheiyo coal.<sup>3</sup> It is also possible for 2-benzyl-naphthalene to be used as a synthetic backbone for larger fullerene type structures and more complicated molecules for further synthetic processes.<sup>4</sup>

## Results and Discussion:

Multiple attempts at the Grignard reaction were made using a commercially available Grignard reagent. From these unsuccessful attempts, the commercial Grignard was replaced with a "home made" Grignard reagent. The <sup>1</sup>H NMR analysis of the crude and purified products suggested the presence of aromatic rings and possible formation of an alcohol. IR analysis was used to corroborate the NMR data for each fraction analyzed. While NMR analysis showed the formation of **3**, IR analysis did not confirm the anticipated alcohol derivative in the collected fractions. A brown solid was synthesized and determined to not be **3**. NMR and IR analysis suggest that the unknown brown compound was 2-naphthylmethanol. The product appears to have either not been formed or formed in low concentrations giving a mixed analysis of the product. The Grignard reaction was improved by making the Grignard reagent after determining that the commercially available Grignard provided was expired.

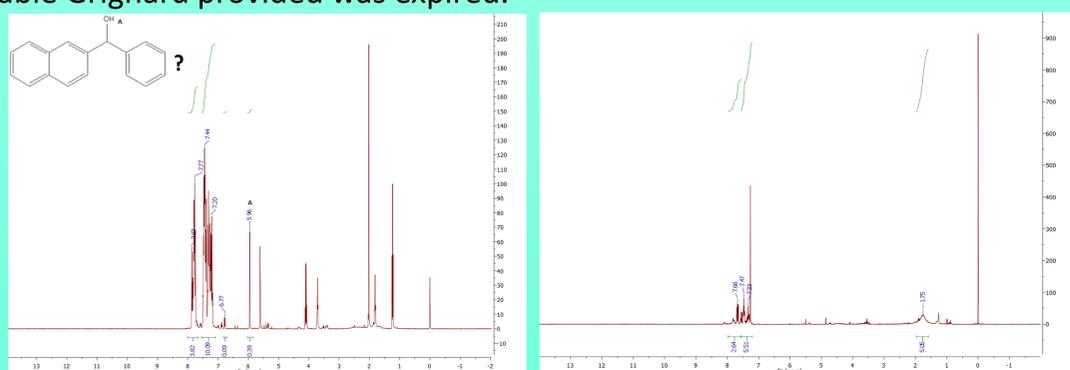


Figure 1. <sup>1</sup>H NMR of crude and pure products<sup>7</sup>

