NOVEL POLYAMIDE BASED MATERIALS FOR OIL BASED DRILLING FLUIDS

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INTRODUCTION.

Invert emulsion drilling fluid is a new class of oil-based fluids used worldwide in drilling operations. Especially important is their use in high temperature-high pressure wells due to their excellent performances; however, at elevated temperatures they suffer from emulsion destruction due to the thermal degradation of emulsifiers [1]. Thus, the synthesis of thermally stable emulsifiers for oil-based drilling fluids is important.

AIM OF THE PROJECT.

Our goal is to synthesize emulsifiers on *polyamide* basis which have less or no environmental impact and are thermally stable for the use in invert emulsion drilling fluids.

MATERIALS AND METHODS

The synthesis of emulsifiers is done in two steps. In the first part, fatty acid was reacted with polyamine to form amidoamine, an intermediate product. In the next part of the synthesis the intermediate is reacted with the anhydride of dicarboxylic acid to form the final product, emulsifier: (Fig. 1). Figure 1. Scheme of emulsifier synthesis.

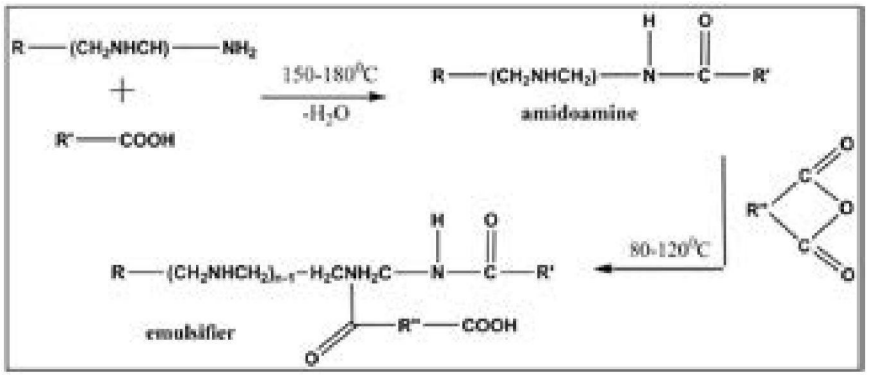

Figure 1. Scheme of emulsifier synthesis.

RESULTS AND DISCUSSION.

Using the above mentioned synthesis steps, six emulsifiers were successfully prepared. To assess their thermal stability, the emulsifiers obtained were tested using thermogravimetric Analysis. All emulsifiers showed a stable profile up to 200°C. This result confirms that the emulsifiers meet one of the important requirements being stable at elevated temperature. The remaining emulsifiers are being tested for thermal stability.

CONCLUSIONS.

Overall, so far 10 amidoamines were synthesized and 6 polyamide emulsifiers were prepared. The next steps are to increase the number of polyamide emulsifiers, testing them for thermal stability and emulsion stability, and in drilling fluid condition.

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