

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

According to the experimental results from this study, the following conclusions could be obtained :

1. In this extraction system, zinc complex ion in form of zinc dialkyl dithiophosphate was extracted from lubricating oil by liquid-liquid extraction technique. The extracting solution was aqueous solution of 8% wt/wt diammonium hydrogen phosphate. The surfactant, Sodium dodecyl benzene sulfonate, could improved the extraction by micellar properties.
2. In this experiments, since the agitator speed used in the range of 400 to 800 rpm was enough to induce well-mixed condition in the system, so it was found that it did not had significant effect on the extraction.
3. At above critical micelle concentration, the anionic surfactant, sodium dodecyl benzene sulfonate, added in extracting solution would tend to increase the percentage of extraction. In addition, it was found that increasing surfactant concentration, the percentage of extraction was also increased.
4. The percentage of extraction of zinc complex ions from lubricating oil, decreased as the phase ratio increased.
5. The percentage of extraction of zinc complex ions from lubricating oil, decreased as the initial zinc concentration increased.

Recommendations

The further recommended studies were as following

1. The other extractant . For example, in the experiment concerning test suitable extractant, it was found that ammonium persulfate gave the highest percentage of extraction. If the equipment was suitable for operate with this extractant, It would be preferred extractant. In addition, the stripping unit should be installed in the system in order to reduce amount of used extractant and recover the extractant.
2. The other types of surfactant.
3. Application of this experimental results for commercial treating waste lubricating oil .
4. Modification of continuous extraction process equipment to improve percentage of extraction.

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