CHAPTER 6

SUGGESTIONS FOR FUTURE WORK

The present work explores a new application of ionic liquid $[BMIM]^+[NTf_2]^-$ in the ELM technology. Since, ionic liquids are task specific chemicals and can be designed according to the requirements for various applications, they can play a vital role in making the ELM technology more reliable and efficient.

The internal mechanism of stability provided by $[BMIM]^+[NTf_2]^-$ remains a mystery. Further investigations are required to understand the phenomenon adequately. SEM/TEM analysis can possibly provide a comprehensible understanding of $[BMIM]^+[NTf_2]^-$ behaviour in emulsion globules. The possibility of the polymeric structure formed by $[BMIM]^+[NTf_2]^-$ can also be confirmed through clear images of globules. After understanding the internal role of $[BMIM]^+[NTf_2]^-$, other ionic liquids can be prepared in order to make this technology less polluted and environmental friendly.

Another investigation which can possibly provide a better understanding of the role of cationic part and anionic part of ionic liquids is to utilize ionic liquids having same anionic part $[NTf_2^-]$ but with different cationic part ($[C_2MIM]^+$, $[C_4MIM]^+$ and $[C_6MIM]^+$.

The productivity of the ELM is dependent on the stability of the ELM. In this work, the stability of emulsion produced was sufficient during the whole process. Still, it was not stable for a long period of extraction and at high agitation speed. Therefore, the use of other surfactant such as polyamine that stabilizes the emulsion during the whole process can be used.

To avoid the dead zones and to achieve a uniform dispersion of globules during the extraction of Cr, not only an optimum stirring speed but also the blade size and the location of impeller should be optimized. Different types of blades can be tried out to obtain the

maximum surface area. Different types of impeller and blades can be utilized to achieve maximum removal efficiency.

The stability analysis of the ELM can be accomplished more accurately by using a high speed camera. It can also provide further information on the interface behaviour and turbidity. A very fine capillary can give more reliable results on the rate of sedimentation of the ELM.

Overall, if the stability of the ELM can be maintained, this technology will be more significant over other extraction technologies.