

SUGGESTIONS FOR FUTURE WORK

In this thesis, some efforts have been made to study the leaching of spent batteries viz., lithium ion batteries and nickel metal hydride batteries. Process parameters for leaching of valuable metals from both types of batteries have been optimized. The bench scale study reported may be considered to be the first stage of development and requires scaling up in large reactors.

Other related research activities that may be suggested are mentioned below:

- Other reducing agents to enhance the recovery all the metals presents in the battery material of spent LIBs need to be explored.
- Though precipitation has been investigated as a separation technique for different metal values present in the leach liquors, the study may be extended to use other separation processes viz. ion exchange and solvent extraction.
- Although the process intensification for selective recovery of metals has been established in the thesis, selective separation of individual metal from the leach liquor can be further carried out.
- Compared to the leaching of mixed electrode materials of NiMH batteries that has been investigated, efforts can be made to leach cathode and anode material (individually) of NiMH battery to generate different types of materials needed for remanufacturing such batteries.
- Separation of individual rare earths and base metals from leach liquors of NiMH battery powder may be investigated to yield viable and valuable products (salts or oxides).