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Monazite a mineral that occurs in the south-western coastal areas of Sri Lanka is a rich source of rare earths. The methods currently available for the separation of rare earths from monazite are unsuitable for Sri Lanka due to high cost. The development of a convenient and an economical separation technique is therefore of importance. Plumbagin a naturally occurring naphthaquinone, extracted from the dried root *Aristea ecklonii* forms chelate complexes with a variety of transition metals. The extension of this study to the f-elements revealed that Th^{4+} , Ce^{3+} and La^{3+} form stable charge transfer complexes with plumbagin. The partial characterization of the products has been done by UV(VIS) and IR spectroscopy. These reactions occur under normal laboratory conditions and are pH dependent.

The Th complex can be conveniently separated from a mixture of the 3 metal ions by using this methodology. This presentation deals with the synthesis, characterisation, solution studies of these complexes and the effectiveness of this methodology in the separation of individual rare earths from a mixture.

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