As a result, fine Eu and Tm targets with the thickness around 500 μg/cm^2 and smooth surfaces were prepared on Al foils by molecular plating method at 500 V for 20 min. Figure 2 showed the photos of Eu and Tm targets as well as the SEM images at the scale of 50 nm. The target surface was smooth and compact with a metallic luster, and no peeling off. The prepared Eu and Tm target will be applied for investigating chemical properties of Nh.

References

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3 - 32 Application of Deep Eutectic Solvents in the Separation of Rare Earth Elements

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Deep eutectic solvent (DES) is usually a mixture prepared by the complexation of hydrogen bond acceptor (HBAs) and hydrogen bond donor (HBDs) at mild performance temperature. Similar to ionic liquid, DES has unique physicochemical properties such as low steam, strong conductivity, stable electrochemical window and strong design ability. Under a relatively mild condition, DES still shows a strong dissolving ability for a variety of insoluble substances. At present, there have been research on the recovery rare earth element and their oxides.

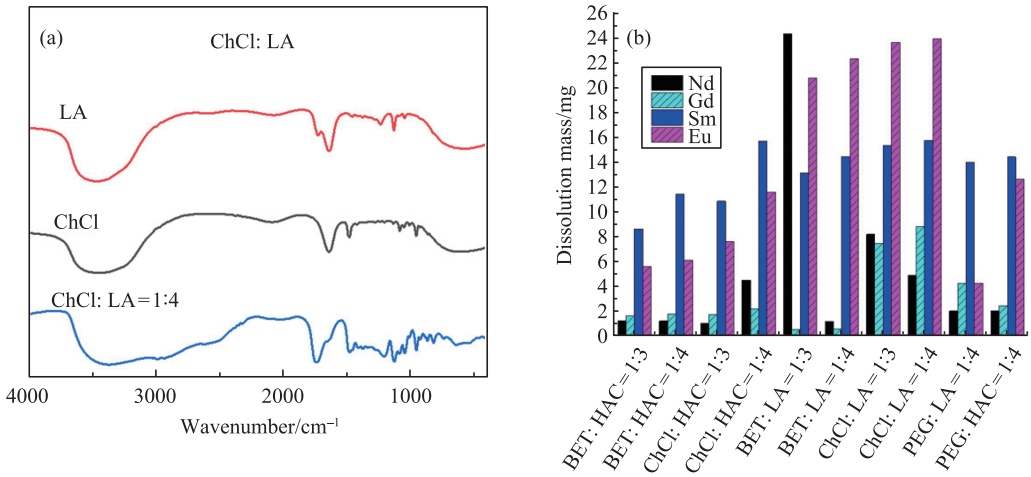

Fig. 1 (color online) (a) Fourier infrared spectrum of DES obtained by mixing choline chloride with lactic acid, (b) DES with strong rare earth dissolving ability.

Here, we prepared a series of deep eutectic solvents and characterized by Fourier infrared spectroscopy (Fig. 1(a)) Very strong hydrogen bond signals were observed, which confirmed the synthesis of DES successfully. At the same time, the strong hydrogen bond signal also affects the further interpretation of Fourier infrared spectra. We further screened the obtained DES and got some solvents with excellent rare earth element solubility, which are often composed of organic acids as hydrogen-bond donor with a quaternary ammonium salt. (Fig. 1(b)) Meanwhile, these DES solvents showed obvious different solubility for light and heavy rare earths, and the solubility gap between light and heavy rare earths can be tens of times. This results can providethe possibility for further separation experiments between the rare earth element or the recovery of the rare earth element from the used nuclear fuel.