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Selective leaching of rare earth elements from NdFeB powders via alkaline treatment and thermal oxidation

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In this study, a new approach for recovering Rare earth elements(REEs) from NdFeB scraps through the alkaline treatment and leaching was attempted. Alkaline treatment has been traditionally applied for the hydrometallurgical process of monazite ores to convert REEs phosphates to soluble REEs hydroxides. It can be performed at a relatively low temperature around 100oC and an ambient pressure without any special equipment. In addition, REEs hydroxides are easily and quickly dissolved in weakly acidic solution. Therefore, the present work applied alkaline treatment to the recycling process of NdFeB alloys and investigated not only the leaching behavior of the resultant powders but also the separation efficiency of REEs and iron.The alkaline treatment of NdFeB powders in NaOH and the oxidation roasting were performed and the leaching of the resultant powers was carried out in HCl solution. Using this method, high leaching yields of REEs of more than 90% are obtained while the leaching yield of iron is lower than 1%. Therefore, high selective leaching efficiency of more than 80 is obtained.

Biography

Kyeong Woo Chung has completed his PhD from Yonsei University and had worked for Hyundai Motors Group. He is the senior researcher of KIGAM. He has published many papers in reputed journals and has been serving as an Editorial Board Member of *Journal of Korea Institute of Resource Recycling*.

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