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Recovery of valuable metals from spent SCR catalysts for de-NOx by soda roasting

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Abstract

The present studies are implemented to recover valuable metals such as vanadium and tungsten from spent SCR catalysts for de-NOx.Optimized the experimental parameters by following order: soda roasting, at high temperature followed by water leaching. Then generated water leach liquor processed by hydrometallurgical routes namely precipitation and solvent extraction. In soda roasting process, sodium carbonate added 5 equivalent ratio at roasted temperature 850℃ with 120min roasted time for 54㎛ average particle size of spent catalysts. After soda roasting process moved to water leaching for roasted spent catalysts. Before leaching process the roasted spent catalysts were grinded up to -45μm particle size. The leaching time is 30min at 40℃ temperature, 10% pulp density. The final leaching efficiency obtained 46% of vanadium and 92% of tungsten by present process. Precipitation experiment carryout using $MgCl_2$ as reagent to selectively precipitate vanadium component from water leach liquor containing vanadium and tungsten. Tungsten component showed large loss because of co-precipitation when precipitating vanadium component.

Biography

Dr. Jin-Young Lee has completed his PhD. from Kwangwoon University. He is the principal researcher of KIGAM. He has published more than 40 papers in reputed journals and has been serving as an editorial board member of KIRR(Korea Institute of Resources Recycling).