

Selective Dissolution of Aluminum and Magnesium from Low Value Scrap Material

Disclosure Number

201303067

Technology Summary

A method has been developed at ORNL that selectively dissolves both aluminum and magnesium from aluminum based alloys in a non-aqueous solvent. The dissolved metal remains suspended in the solution and can be precipitated as an air/water reactive purified metal alkoxide salt, or re-electrodeposited as the purified primary metal. Bulk metals including copper, brass, carbon steel and stainless steel as well as second phase alloying elements including silicon, copper, iron and titanium remain behind undisturbed. The process offers the unique advantage over alternative sorting methodologies in that it need not distinguish between high and low grade aluminum/magnesium alloys; it selectively dissolves and thereby purifies aluminum/magnesium from low grade scrap material and transforms the product into a higher grade material.

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