Supporting Information

Recovery of lithium, nickel, cobalt, and manganese from spent lithium-ion batteries using L-tartaric acid as a leachant

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Summary Information

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Table S1. Metal content in the cathodic materials from spent LIBs.

Element	Li	Ni	Co	Mn	Al
Content (wt%)	6.28	11.85	35.52	8.15	0.11

Table S2. Model parameters of leaching kinetics.

T (°C)	First stage (fast)								Second stage (slow)							
	Mn		Li		Co		Ni		Mn		Li		Co		Ni	
	k	R^2	*k*	R^2	*k*	R^2	*k*	R^2	*k*	R^2	*k*	R^2	*k*	R^2	*k*	R^2
40	0.0059	0.982	0.0049	0.994	0.0043	0.989	0.0057	0.987	0.0034	0.976	0.0031	0.991	0.0025	0.989	0.0043	0.997
50	0.0128	0.968	0.0089	0.966	0.0082	0.973	0.1152	0.978	0.0061	0.991	0.0055	0.979	0.0047	0.967	0.0076	0.992
60	0.0272	0.995	0.0152	0.969	0.0144	0.967	0.0264	0.995	0.0116	0.989	0.0096	0.991	0.0092	0.962	0.0124	0.995
70	0.0566	0.969	0.0295	0.963	0.0287	0.968	0.0577	0.975	0.0249	0.999	0.0171	0.999	0.0165	0.963	0.0233	0.969
80	0.1027	0.999	0.0509	0.964	0.0545	0.981	0.103	0.999	0.0348	0.999	0.0323	0.999	0.0325	0.999	0.0327	0.997

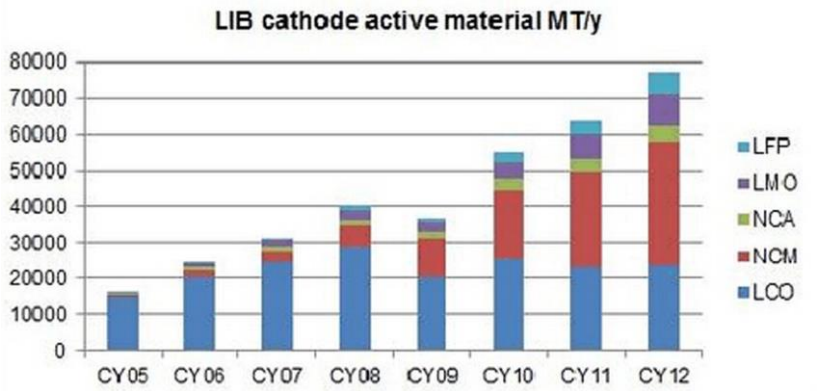

Figure S1. Market changes in cathode-active materials of LIBs (LFP = $LiFePO_4$, LMO = $LiMn_2O_4$, NCA = $LiNi_xCo_yAl_zO_2$, NCM = $LiNi_xCo_yMn_zO_2$, LCO = $LiCoO_2$).[1]

References

1. *LIB-related Study program*; Institute of Information Technology: 2013.