Electrochemical performance of Fe or Cu/graphene composites as anode materials for lithium ion batteries

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Recently, transition metal oxides (MO, M = Fe, Cu, Sn, etc) have been attracted as one of the most candidates because of their high theoretical capacities and energy densities. However, a huge volume change with agglomeration of the metals during lithium ion insertion and extraction leads to mechanical stresses on the electrodes and result in a rapid capacity fading and poor cyclic performance. To overcome these problems, one possible way is to disperse nan-sized transition metal oxide particles onto carbon supports such as graphite, graphene, etc.

In the presentation, nano-sized Fe and Cu particles supported on graphene were synthesized via a chemical reduction method using ethylene glycol(EG). The morphologies and phase structures of the nano-sized Fe/Graphene and Cu/Graphene particles are thoroughly investigated using X-ray diffractometer (XRD), field emission scanning electron microscopy (FE-SEM), and so on. We also perform several electrochemical tests: coin-half cell test, CV, impedence.