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Review on aqueous lithium Li-ion battery

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Abstract

With increasing world population, the rate of using fossil fuels to produce energy has also increased rapidly. Because the use of fossil fuels releases green Co2 house gases such as, the development of environmentally friendly energy like the combination of renewable energy with rechargeable Lithium-ion batteries becomes important. Lithium-ion batteries have been commercialized for two decades. These batteries perform well but some problems still remain. Usually rechargeable lithium-ion batteries contain flammable organic electrolyte, which can be a fire hazard and is not environmentally friendly. Another important problem is the high manufacturing cost of these organic electrolytes. In the middle of 1990s, Dahn and his research group published a study which proposed a new type of battery that uses an aqueous electrolyte instead of an organic electrolyte. This new electrolyte does not present a fire hazard and instead is cheap, safe and environmentally friendly. The major problem for developing is that the energy density of this battery is lower than the non-aqueous battery. Although much research has occurred on aqueous Lithium-ion batteries since 1990, none of them have shown properties that are comparable with non-aqueous lithium batteries.

Biography

Pedram Mohrdar Ghaemmaghami is working on his PhD, at Chemical Engineering Department of New Mexico State University. He got his master in Material Science Engineering from New Mexico Tech and his bachelor in Material Science Engineering from University of Tehran-Iran.