

Formation at high potentials to suppress performance degradation and gassing of LiMn₂O₄/Li₄Ti₅O₁₂ batteries

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Spinel Li₄Ti₅O₁₂ has become an alternative material to replace graphite anodes in terms of solving safety issues and improving battery life-time. Unfortunately, destructive gas generation with associated swelling has been a major challenge to the large-scale application of lithium ion batteries made from Li₄Ti₅O₁₂ anodes. Here we report root causes of the gassing behavior, and suggest a high potential formation schedule to suppress it. It was found that the high potential formation schedules in LiMn₂O₄/Li₄Ti₅O₁₂ batteries can effectively inhibit gassing and Mn deposition in LiMn₂O₄/Li₄Ti₅O₁₂ battery. High potential formation schedule can also significantly improve cycling performance due to stable interface and intact SEI film caused by this specially designed formation schedules.

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