

Industry production of graphene materials applied in lithium ion batteries

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Abstract Oxidation-exfoliation-reduction method is used for industrial production of high purity and low cost graphene powder. As conductive additive, graphene powder is developed into graphene slurry dispersed in NMP solutions with ultra-high dispersion, good stability and processability. Based on excellent electrical conductivity (20000S/m) and two dimensional nanostructure of graphene (2~5layers), as conductive additives of lithium ion batteries, it can increase the capacity, improve the rate, cycling life, high & low temperature performance and safety performance [1-2]. Herein, we introduce our strategies and results of the comparison with other conductive additives on the applications in lithium ion batteries.

References

- [1] Jiang, Ke-Cheng, et al. "Improved kinetics of LiNi 1/3 Mn 1/3 Co 1/3 O 2 cathode material through reduced graphene oxide networks." *Physical chemistry chemical physics* 14.8 (2012): 2934-2939.
[2] Kucinskis, Gints, Gunars Bajars, and Janis Kleperis. "Graphene in lithium ion battery cathode materials: A review." *Journal of Power Sources* 240 (2013): 66-79.

Figures

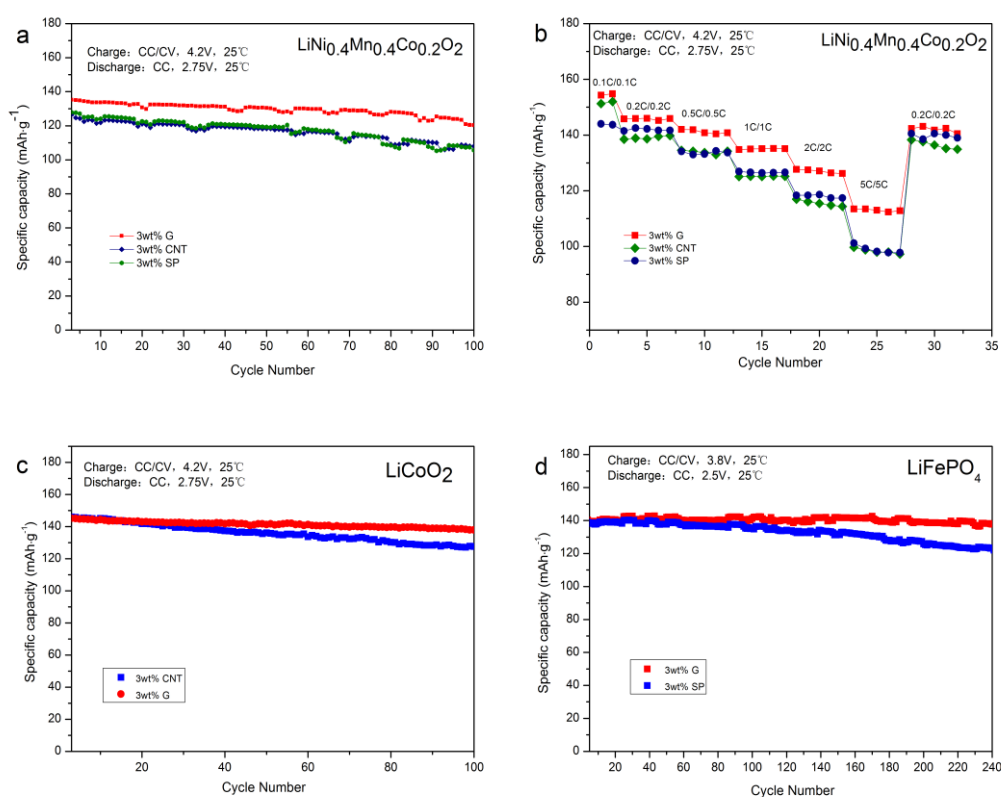


Fig.1 (Li⁺/Li cycled at 1C (b) Rate performance of LiNi_{0.4}Mn_{0.4}Co_{0.2}O₂ electrode in the voltage range of 2.75-4.2V v.s. Li⁺/Li (c) Cycle performance of the LiCoO₂ electrode in the voltage range of 2.5-4.2V v.s. Li⁺/Li cycled at 0.2C (d) Cycle performance of the LiFePO₄ electrode in the voltage range of 2.5-3.8V v.s. Li⁺/Li cycled at 1C.