

The Recent Development of CSCC's Anode Materials of LIB

Po-Chin Chen (陳柏欽)*, Kai-Chih Hsu (許凱智), Hsiang-Yu Hsu (許湘禹)

China Steel Chemical Corporation, No42, Chung-Lin Road, Hsiao Kang, Kaohsiung, Taiwan
03021@e-cscc.com.tw

Abstract

To promote the capacity for future LIB applications, CSCC developed unique manufacture processes to elevate the specific capacities of mesographite, which is so-called MCMB (Meso Carbon Micro Beads). CSCC's high capacity mesographite products include MG11, MG12, and MG13, their morphologies are all spherical, and their D50 values are 12 μ m, 18 μ m, and 22 μ m, respectively. The corresponding specific capacity of each product is 350mAh/g, 355mAh/g and 360mAh/g. It's a great improvement of specific capacity over traditional MCMB. CSCC not only make a great effort to enhance capacity but also try to improve the rate capability by surface modification and electrode formula adjustment.^[1]

MG12 with surface modification was named as MG12C. After surface modification, the 3C constant current charge ratio at room temperature could be increased from 30% to 47%. The charging/discharging rate performance of MG12C at 25 °C and 0°C are shown in figure 1 and figure 2, respectively.

Besides spherical shaped products, UF-1, MG30, MG31, and MG32 are CSCC's irregular shaped products. They have different particles sizes and specific capacities, which are suitable for different LIB applications.

Recently, Si-based anode materials have attracted many attentions by their high specific capacity^[2]. One of the most promising materials is SiOx. However, in practical, SiOx need to blend with the proper graphite to improve its electrode density, resistance and cycle performance. CSCC's graphite can well match with commercial SiOx, and exhibit not only good cycle life, but also high rate performance.

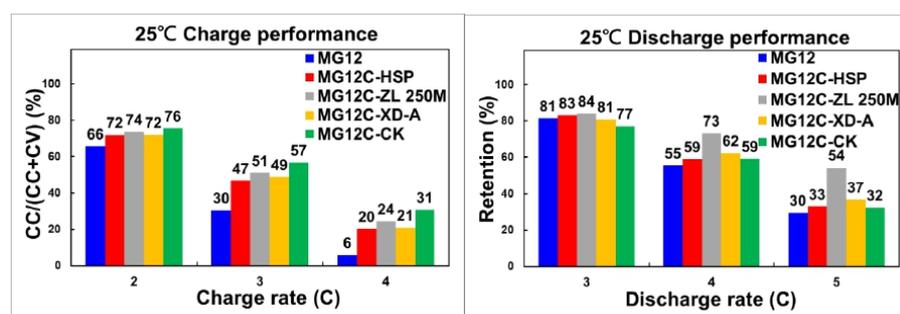


Figure 1 Rate performance @ RT

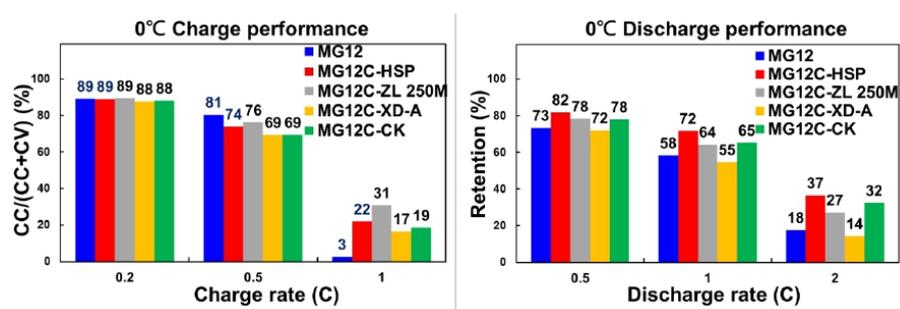


Figure 2 Rate performance @ 0°C

LIB, Graphite, SiOx, Surface Modification, MCMB .

References

- [1] Hsiang-Yu Hsu, Kai-Chih Hsu, Yi-Shiun Chen, Po-Chin Chen, Wei-Chih Chen, "Enhancement on rate performance in Li-ion batteries by anode surface modification and electrode formula adjustment", The 58th Battery Symposium in Japan.
- [2] P. C. Chen, H. Y. Hsu, Y. P. Yang, W. C. Chen, Y. S. Chen, K. C. Hsu, C. C. Chang, K. Z. Fung, "Development of Si-based Anode Materials for Li-ion Batteries", The 59th Battery Symposium in Japan.