

25 July 2022

**MN ENERGY LIMITED HPMSM SUCCESSFULLY UTILISED IN PRODUCTION OF P-CAM**

Mn Energy Limited (MNE) is pleased to report that a sample of its independently verified battery grade high purity manganese sulphate monohydrate (HPMSM) has been successfully utilised for the first time in Australian production of high-quality precursor cathode active material (P-CAM).

Future Battery Industries Cooperative Research Centre (FBI-CRC) headquartered at Curtin University, reported the successful production of 8:1:1 nickel cobalt manganese (NCM) P-CAM using battery grade HPMSM produced by MNE using its patent pending leach/filtration process as part of its ongoing development and commercialisation program in WA.

The MNE HPMSM product was analysed by FBI-CRC and returned the following analysis compared with example industry specifications:

Element	Unit	MNE HPMSM Analysis (FBI)	FBI-CRC Specifications	China Specifications <sup>1</sup>
Mn	%	29.9 ±2.5	31.8 min	31.8 – 32.0
Pb	ppm	0.3	10 max	10 – 15
As	ppm	0.1	10 max	No data
Cd	ppm	0.1	10 max	5 – 10
Ca	ppm	20	50 max	100 – 200
Mg	ppm	9.3	50 max	100 – 200
Fe	ppm	13.3	10 max	10 – 20
Zn	ppm	0	10 max	10 – 20
Cu	ppm	1.6	10 max	10 – 20

<sup>1</sup> China Ministry of Industry and Information Technology

Table 1 – Consolidated technical specifications including the current Chinese standard for Mn sulphate.

P-CAM (mixed metal hydroxide precursor) is derived from purified metal salts that originate from mineral concentrate and is the precursor to the lithiated final cathode active material (CAM) product.

Both P-CAM and CAM products are subject to strict quality specifications in terms of their impurities, particle size distribution and particle shape, and electrochemical attributes.

FBI-CRC reported that the P-CAM product met or exceeded typical specifications and produced uniform, dense and spherical particles as illustrated in the SEM image below.

MNE Executive Director, Mike Kitney said “We are excited by the work being done by the FBI-CRC in WA and are pleased to have had the opportunity to provide a sample of our battery grade product that contributed to the first Australian production of high-quality P-CAM product using locally produced HPMSM. This result is a significant step along the road to establishing the place of MNE and WA in the growing battery materials supply chain in Australia.”

Chief Executive Officer of FBI-CRC Shannon O’Rourke said “The high quality of these results demonstrates Australia’s capability in the battery chemistry field, and the potential for companies like Mn Energy to play a leading role in the further development of the industry.”

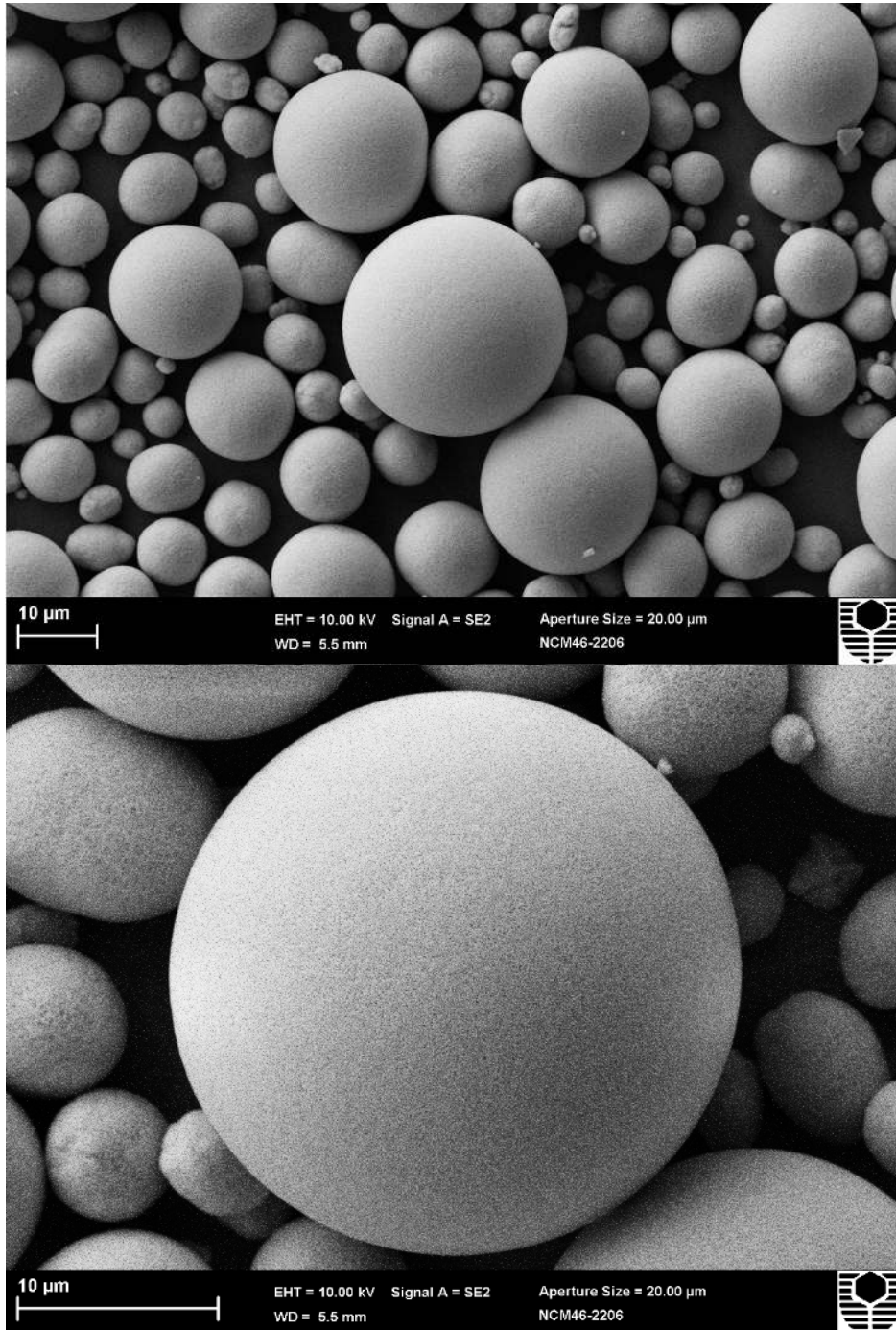


Fig.1 – Scanning electron microscope (SEM) images of NCM-46 (continuous operation after 12 days).