

Synthesis of nanowire electrodes by the electrospinning method and analysis by soft X-ray scanning transmission X-ray microscope

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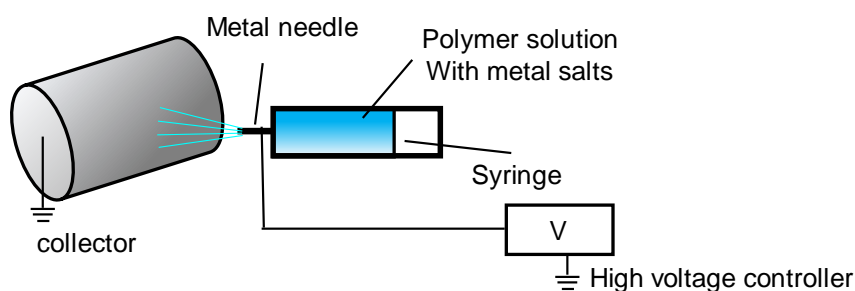
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For reduction of CO₂ emission, development of high performance Li-ion batteries with high power, high energy densities, and high safety are expected to be installed to electric vehicles. Nanomaterials are important for high power performances because the large interface and short diffusion length of lithium ions are suitable. However, unstable interfaces are parts of deterioration for lithium ion batteries. Thus, fabrication of nanomaterials with stabilized surface is important for the development of nanomaterials.

We have reported fabrication of nanowire materials by electrospinning method, (Scheme 1) which is convenient for fabricating 1-dimensional nanostructured materials. Poly-crystalline^{1,2}, meso-crystalline^{3,4}, and single-crystalline⁴⁻⁶ nanowire materials are obtained by the method. In addition, core-sheath structure constructed by core of active materials and sheath of carbon is easily synthesized.³⁻⁶

In this presentation, we report nanowire materials such as core-sheath single crystalline nanowire of LiFe_xMn_{1-x}PO₄ and amorphous carbon by electrospinning methods and analysis of soft X-ray scanning transmission X-ray microscope of core-sheath nanowires.



Scheme 1. Electrospinning method

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