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電解噴霧法を利用したゼオライト鋳型炭素フレキシブル電極の作製

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Easy fabrication of superporous zeolite templated carbon electrodes by electrospraying on rigid and flexible substrates

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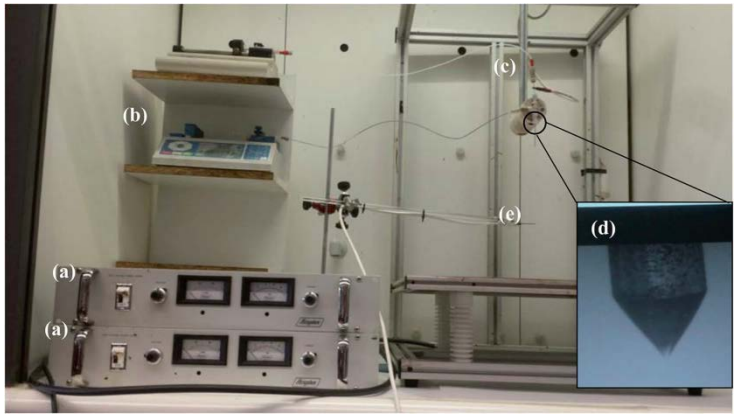

Fig.1. 電界紡糸装置. Reproduced from the above paper with permission from The Royal Society of Chemistry.

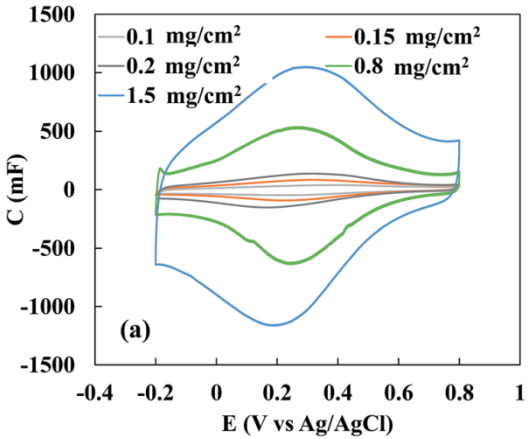

Fig.2. 作製した電極のCVパターン (1M H_2SO_4). Reproduced from the above paper with permission from The Royal Society of Chemistry.

電解噴霧法により、ゼオライト鋳型炭素とナフィオンの複合電極膜を作製した。得られた電極は1M H_2SO_4電解液中でゼオライト鋳型炭素のキノン基に由来する大きい疑似容量により、700 mF/cm^{2}に達する高い容量を示した。本手法を用いれば、様々な基板上に簡単に高密度かつ柔軟な高性能電極膜を形成できる。

A composite electrode membrane consisting of zeolite-templated carbon and Nafion has been prepared by an electrospraying method. The electrode thus obtained exhibited a high areal capacitance of 700 mF/cm2 thanks to a significant contribution of a large amount of quinon-type functional groups of zeolite-templated carbon. The proposing technique allows an easy preparation of high-performance electrode membranes with a high density and flexibility on a variety of substrates.