菱面体硫化ホウ素とカーボン担体の相互作用が酸素発生反応特性に及ぼす影響

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Effect of the Interaction Between Rhombohedral Boron Monosulfide and Carbon Supports on Oxygen Evolution Reaction ([1]*University of Tsukuba*, [2]*National Institute for Materials Science*)
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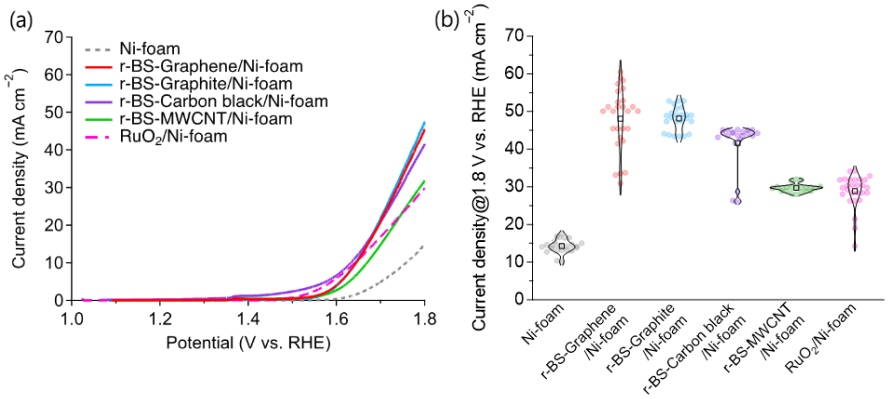
A key challenge is the development of environmentally friendly catalysts to improve the efficiency of the oxygen evolution reaction (OER). In this study, rhombohedral boron monosulfide (r-BS) was used as a catalyst, and its interaction with conductive carbon supports (graphene, graphite, carbon black, and multi-walled carbon nanotubes, MWCNTs) was investigated to understand its effect on OER performance. The catalytic activity was evaluated using linear sweep voltammetry, and data variability was analyzed with violin plots, revealing the impact of carbon support properties on catalyst activity and durability. This presentation will discuss the mechanisms behind activity enhancement and durability improvements based on the characteristics of each carbon support.
Keywords : Water Electrolysis; Metal Free; Carbon Materials

酸素発生反応（Oxygen Evolution Reaction: OER）の効率化を実現する環境負荷の低い触媒の設計は重要な課題である。本研究では、菱面体硫化ホウ素（Rhombohedral Boron Monosulfide: r-BS）を触媒として用い、導電性を付加するカーボン担体（グラフェン、グラファイト、カーボンブラック、多層カーボンナノチューブ（MWCNT））との相互作用が OER 特性に与える影響を検討した。リニアスイープボルタンメトリーによる活性評価およびバイオリンプロットを用いたデータのばらつき解析により、カーボン担体の特性が触媒活性や耐久性に与える影響が明らかとなった。本発表では、各担体の特徴に基づく活性向上メカニズムや耐久性評価の詳細について議論する。



1) Boron monosulfide as an electrocatalyst for the oxygen evolution reaction has been reported. L. Li, *et al.*, *J. Eng. Chem.* **2023**, *471*, 144489.