

## 導電助剤フリーの有機蓄電池を開発

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## Electrical Conductivity-Relay between Organic Charge-Transfer and Radical Salts toward Conductive Additive-Free Rechargeable Battery

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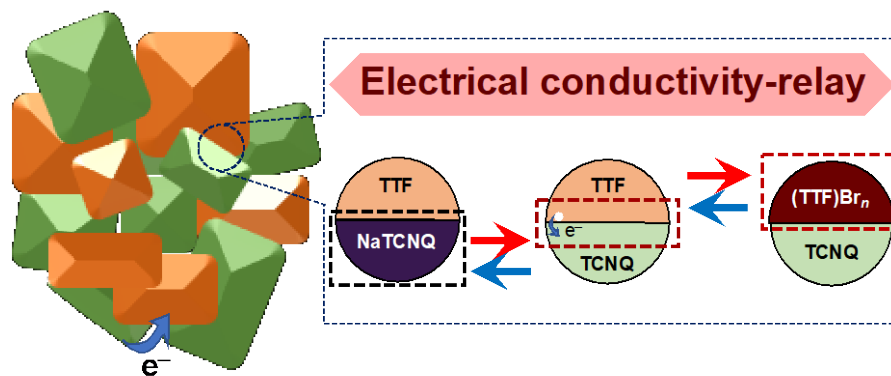


Figure 1. Schematic illustration of the electrical conductivity-relay via the charge-transfer phenomenon and organic radical salts using tetrathiafulvalene (TTF) and tetracyanoquinodimethane (TCNQ) and aqueous NaBr electrolyte.

有機蓄電材料は導電性が低いため大量の導電助剤を必要とすることから、実質的な容量が小さくなる課題がある。本研究では、二つの有機分子材料を混ぜることで導電性が現れる電荷移動現象と、充放電時の導電性有機ラジカル塩生成機構を組み合わせた「導電性リレー機構」を考案し、導電助剤フリーで繰り返し充放電が可能な有機蓄電池の開発に成功した。

We demonstrate a novel electrical conductivity-relay system; a combination of a charge-transfer phenomenon at interfaces and an organic radical salts formation throughout charge/discharge cycles. A simply mixed molecular crystal couple of tetrathiafulvalene and tetracyanoquinodimethane electrode maintains the electrical conductivity without a conductive additive.

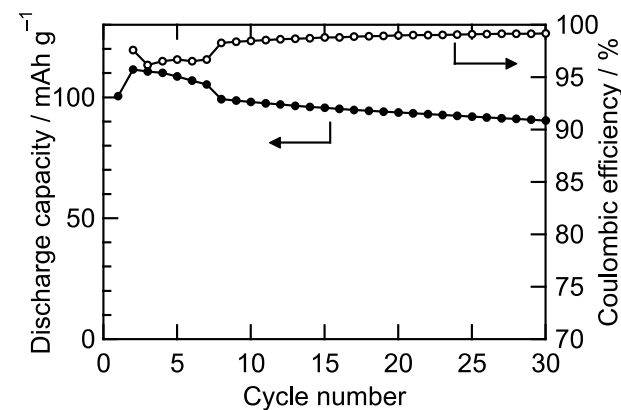


Figure 2. Capacity retention and coulombic efficiency of the TTF-TCNQ mixture cathode without a conductive additive.