# Article information:

功能化细菌纤维素作为分离器，以解决锂硫电池中穿梭的多硫化物 - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S2468606921001787>

# Article summary:

1. Lithium-sulfur batteries (LSB) have the potential to provide more than 350 Wh/kg of energy at a low cost, making them attractive for battery research.

2. Polysulfide shuttling between the cathode and anode can reduce efficiency, capacity, and cause battery failure. Strategies such as physical capture, chemical binding, separator modification, and functionalization are used to reduce polysulfide shuttling.

3. Bacteria cellulose (BC) is superior to plant-derived celluloses due to its higher purity and better crystallinity, which makes it a promising material for use as a battery separator. Oxidized BC membranes were demonstrated to be effective in reducing polysulfide shuttling and providing excellent electrochemical performance in lithium-sulfur batteries.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

This article provides an overview of strategies used to reduce polysulfide shuttling in lithium-sulfur batteries (LSB). The article is well written and provides a comprehensive review of the literature on this topic. It presents various strategies that have been proposed for reducing polysulfide shuttling in LSBs, including physical capture, chemical binding, separator modification, and functionalization. The article also discusses the potential of bacteria cellulose (BC) as a promising material for use as a battery separator due to its high purity and better crystallinity compared to plant-derived celluloses. The authors then demonstrate that oxidized BC membranes are effective in reducing polysulfide shuttling and providing excellent electrochemical performance in lithium-sulfur batteries.

The article is generally reliable and trustworthy; however there are some potential biases that should be noted. For example, the authors focus primarily on strategies involving separator modification or functionalization rather than other approaches such as using additives or solvents to stabilize polysulfides or inserting conductive interlayers between the cathode and anode sides of the cell. Additionally, while the authors discuss the potential benefits of using BC as a battery separator material, they do not explore any possible risks associated with its use such as toxicity or environmental impacts. Furthermore, while the authors present evidence from their own experiments demonstrating that oxidized BC membranes are effective in reducing polysulfide shuttling and providing excellent electrochemical performance in lithium-sulfur batteries, they do not provide any evidence from other studies that support these claims or explore any counterarguments that may exist regarding their findings.

In conclusion, this article provides an informative overview of strategies used to reduce polysulfide shuttling in LSBs; however there are some potential biases that should be noted when evaluating its trustworthiness and reliability such as focusing primarily on one approach over others and not exploring any possible risks associated with using BC as a battery separator material or presenting counterarguments regarding their findings from experiments conducted by the authors themselves.

# Topics for further research:

* Polysulfide stabilization strategies
* Additives for lithium-sulfur batteries
* Solvents for lithium-sulfur batteries
* Conductive interlayers for lithium-sulfur batteries
* Toxicity of bacteria cellulose
* Environmental impacts of bacteria cellulose

# Report location:

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