# Article information:

Mechanism, modeling, detection, and prevention of the internal short circuit in lithium-ion batteries: Recent advances and perspectives - ScienceDirect  
<https://www.sciencedirect.com.remotexs.ntu.edu.sg/science/article/pii/S2405829720304396>

# Article summary:

1. A comprehensive review of the mechanism, inducement, evolution, and simulation experiments of internal short circuit in lithium-ion batteries is provided.

2. Existing methods for internal short circuit detection are classified and discussed, with proposed methods for four special cases.

3. Key technologies of internal short circuit are prospected, with a focus on the development of big data and artificial intelligence technology to improve accuracy and timeliness of detection.

# 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:

The article provides a comprehensive review on the mechanism and evolutionary process of internal short circuit (ISC) in lithium-ion batteries (LIBs). The article is well-structured and organized, providing an overview of ISC types and inducing mechanisms under various inducements as well as eleven existing ISC substitute experimental methods. Additionally, three coupling models of electric-thermal-ISC models are introduced to simulate the characteristics of ISC. Furthermore, existing ISC detection methods are reviewed in detail and divided into six categories. Moreover, proposed methods for ISC detection under four special conditions are presented. Lastly, existing ISC prevention methods are reviewed and key technologies of ISC are prospected.

The article appears to be reliable overall; however there may be some potential biases due to its focus on LIBs as the primary source for EVs power battery applications without exploring other alternatives such as fuel cell vehicles or hybrid EVs which could provide different perspectives on safety concerns related to EV power batteries. Additionally, while the article does provide an overview of existing ISC prevention methods it does not explore any potential risks associated with these methods or their effectiveness in preventing safety failures such as thermal runaway which could be further explored in future research.

# Topics for further research:

* Alternative power sources for EVs
* Safety risks associated with ISC prevention methods
* Effectiveness of ISC prevention methods
* Thermal runaway prevention methods
* Coupling models of electric-thermal-ISC
* Key technologies for ISC prevention

# Report location:

<https://www.fullpicture.app/item/2fa8c1be95c5fc6dc95f3fb3fb4072c2>