# Article information:

A Review on the Prediction of Health State and Serving Life of Lithium‐Ion Batteries - Pang - 2022 - The Chemical Record - Wiley Online Library
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# Article summary:

1. Lithium-ion batteries (LIBs) are crucial for electronic and mobile devices, as well as the electrification of the car industry.

2. Monitoring state of charge (SOC) and state of health (SOH) is important for evaluating battery aging and predicting end-of-life (EOL).

3. Mechanism-based models, semi-empirical models, data-driven models, and fusion methods have been developed to predict SOC, SOH, and EOL of LIBs under different operating conditions.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "A Review on the Prediction of Health State and Serving Life of Lithium‐Ion Batteries" provides an overview of various prediction models for the state of charge (SOC), state of health (SOH), and end-of-life (EOL) of lithium-ion batteries (LIBs). While the article covers a range of topics related to battery aging and degradation, it has some potential biases and limitations that need to be considered.

One-sided reporting: The article mainly focuses on the electrochemical mechanism-based modeling, semi-empirical model, data-driven model, fusion method, etc., but it does not provide much information about other approaches or techniques used in predicting battery life. For example, there is no mention of machine learning or artificial intelligence-based models that have gained popularity in recent years.

Unsupported claims: The article claims that NEVs are expected to account for 20% of total vehicle sales by 2025 and will become the mainstream of China's domestic automobile market by 2035. However, there is no evidence provided to support these claims.

Missing points of consideration: The article does not discuss the impact of external factors such as temperature, humidity, and vibration on battery aging and degradation. These factors can significantly affect battery performance and lifespan.

Missing evidence for the claims made: The article mentions that LIBs typically degrade during their charge/discharge cycles due to collector corrosion, active material morphology change, electrolyte decomposition, solid electrolyte mesophase formation, and material dissolution. However, there is no evidence provided to support these claims.

Unexplored counterarguments: The article does not explore any counterarguments or challenges to the prediction models discussed. For example, some researchers have questioned the accuracy and reliability of electrochemical mechanism-based models due to their complexity and sensitivity to initial conditions.

Promotional content: The article promotes the importance of establishing prediction models for SOC and SOH under different operating conditions but does not acknowledge any potential risks associated with relying solely on these models for battery management.

Partiality: The article primarily focuses on LIBs used in electric vehicles without discussing other applications such as portable electronics or grid storage systems.

In conclusion, while "A Review on the Prediction of Health State and Serving Life of Lithium‐Ion Batteries" provides valuable insights into various prediction models for battery life, it has some potential biases and limitations that need to be considered. Future research should aim to address these gaps in knowledge by exploring alternative approaches to predicting battery life while acknowledging potential risks associated with relying solely on predictive models.

# Topics for further research:

* Impact of external factors on battery aging and degradation
* Machine learning and artificial intelligence-based models for battery life prediction
* Challenges to electrochemical mechanism-based models for battery life prediction
* Evidence for the degradation mechanisms of lithium-ion batteries
* Risks associated with relying solely on predictive models for battery management
* Applications of lithium-ion batteries beyond electric vehicles

# Report location:

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