# Article information:

Thermal runaway modeling of large format high-nickel/silicon-graphite lithium-ion batteries based on reaction sequence and kinetics - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0306261921012538>

# Article summary:

1. The rapidly growing electric vehicle market requires high energy lithium-ion batteries for extended cruising range. Commercial large format high-nickel/silicon-graphite batteries have been applied in EVs with a cruising range of up to 800 km.

2. NCM811 and SiC, the materials used in these batteries, are poor in thermal stability and pose high thermal runaway risks. Safety concerns have highlighted the need to investigate the thermal behavior of these batteries and establish accurate thermal models.

3. Limited studies have focused on the thermal behavior and kinetics of NCM811 and SiC materials. Thorough thermal tests and comparable kinetics are necessary for accurate modeling. Current TR models fail to predict the maximum TR temperature due to incomplete inclusion of side reactions. The side reaction sequence and exact thermal kinetics should be considered in TR models for accurate prediction.

# 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:

这篇文章主要介绍了大型高镍/硅石墨锂离子电池的热失控建模。然而，文章存在一些问题和偏见。

首先，文章提到了市场对高能量锂离子电池的需求，但没有提及其他类型的电池或技术。这可能导致对其他潜在解决方案的忽视，并使读者认为只有高镍/硅石墨电池是唯一可行的选择。

其次，文章声称NCM811和SiC材料在热稳定性方面存在问题，并指出安全隐患影响了消费者的信心。然而，文章没有提供足够的证据来支持这一观点。它只引用了几个研究，但并未详细说明它们的实验设计、结果和结论。因此，读者无法确定这些材料是否真的存在严重的热失控风险。

此外，文章提到数学模型可以预测电池的热失控特性，但并未提供足够的信息来支持这一说法。它只简单地列举了几个已有模型，并指出它们在预测最大热失控温度方面存在问题。然而，文章没有解释为什么这些模型失败，也没有提供任何新的模型或方法来解决这个问题。

最后，文章没有平衡地呈现双方观点。它只关注了高镍/硅石墨电池的潜在问题和风险，而忽略了其他类型的电池或技术的优势和发展。这可能导致读者对高镍/硅石墨电池持有偏见，并忽视了其他潜在解决方案。

综上所述，这篇文章存在一些偏见和不足之处。它未能提供充分的证据来支持其主张，并忽视了其他潜在解决方案的存在。此外，它没有平衡地呈现双方观点，可能导致读者对高镍/硅石墨电池持有偏见。因此，在评估该文章时需要谨慎，并考虑其他来源和观点。

# Topics for further research:

* 其他类型的电池或技术
* NCM811和SiC材料的热稳定性问题
* 数学模型预测电池热失控特性的支持信息
* 其他模型或方法解决热失控问题
* 其他类型的电池或技术的优势和发展
* 平衡地呈现双方观点

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