Lithium-ion batteries are a common type of renewable energy storage. Concerns about their cost and material availability have led to sodium-ion batteries (NIBs) being considered as a viable alternative. In order to compete with lithium-ion technology, the storage capacity and stability of NIBs must be improved.

**Hypothesis:** Coating the titania (TiO₂) nanotube anode with alumina (Al₂O₃) and TiO₂ will stabilize the solid electrolyte interphase (SEI) layer and subsequently increase the reversible capacity of the sodium-ion battery.

**Future Work:**
- Investigate 2 nm Al₂O₃ coatings on amorphous TiO₂ nanotubes to confirm its positive effect
- Improve process control to minimize variations in sample preparation

**Summary:**
- TiO₂ nanotubes were coated in Al₂O₃ and TiO₂ and used as anodes in sodium-ion batteries
- 2 nm Al₂O₃ coating on amorphous TiO₂ increased capacity and coulombic efficiency, while 4 and 8 nm Al₂O₃ coatings drastically decreased capacity
- Al₂O₃ coatings had little effect on anatase TiO₂ batteries
- TiO₂ coatings slightly improved anatase TiO₂, coulombic efficiency
- Significant variation was observed in control samples

**References**
3. Andreas Savva, Kassiopeia Smith, Steven Letourneau, Elton Graugnard*, Hui Xiong*

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