

# Single-Use High Energy Density Microbattery via All Active Material (AAM) Cathode

## Problem Identification



### Capsule Endoscopy (CE)

- Battery life of 8-12 hours
- Low completion rate (75%)
- Limited size and function
- Battery needs more capacity or smaller size to improve data quality/user experience



### Continuous Glucose Monitor (CGM)

- Battery Life of 14 days
- Frequent change of device
- Improved battery reduces user Interaction and expense

## Team

- 7 Patent Applications
- I-CORPS Participation
- Incubator Lab Participation, Darden School of Business at University of Virginia



Chen Cai, Ph. D.  
CEO at Torpel

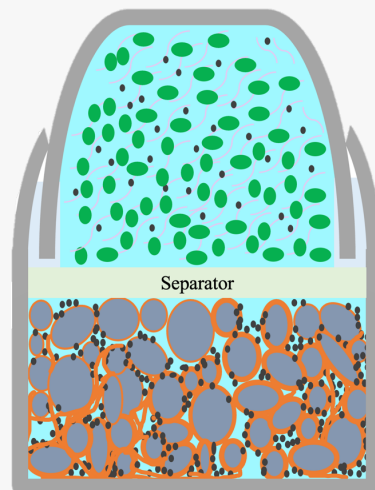


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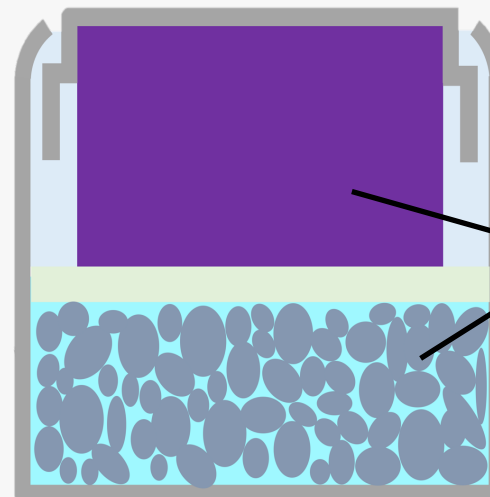


## Proposed Innovation

### Commercial Alkaline Battery



### All Active Material (AAM) Electrode Battery



- High Volume Utilization
- Increase Battery Capacity to 230% of competitors
- Drop-in Replacement
- Improve Success Rate of CE
- Less Frequently Change CGM by 50%

Active material only

Improved Volume Utilization

World Journal of Gastroenterology: WJG. 21 (2015) 2677.  
Gastroenterology Research and Practice. 2012 (2012) 841691  
<https://www.freestyle.abbott/us-en/support/faq.html?page=device/freestyle-libre-14-day-system/faq>  
<https://www.medtronic.com/covidien/en-us/products/capsule-endoscopy/pillcam-sb3-system.html>

- Gelling Agent
- Conductive Additive
- Zn Metal
- Aqueous Electrolyte
- Polymer Binder
- Conductive Additive
- Ag<sub>2</sub>O