

Micro-nano structured Si/C composite anode design encapsulates nano-size Si aggregate into micro-size C-based conglomerate, enhances the specific capacity of the anode of Li-ion energy storage device for disposable medical capsule application.

Keywords:

- Disposable medical capsule, energy density, high-capacity, lithium-ion, micro, nano, silicon, carbon, energy storage device, environmental-friendly.

Problems addressed

Rising disposable medical capsule applications seek for higher power and/or energy density requirement against existing applications. Thus drives the implementation and development of high-capacity rechargeable lithium-ion energy storage technology.

ASTRI's design employed micro-nano structured silicon/carbon composite which aids to nearly double the anode specific capacity (700 vs 370 mAh/g) of Li-ion energy storage device for disposable medical capsule applications.

Innovations

The innovative micro-nano structured Si/C composite anode design encapsulates nano-size Si aggregate into micro-size C-based conglomerate, markedly boosted anode specific capacity. The technology is applicable for the advancing disposable medical capsule applications.

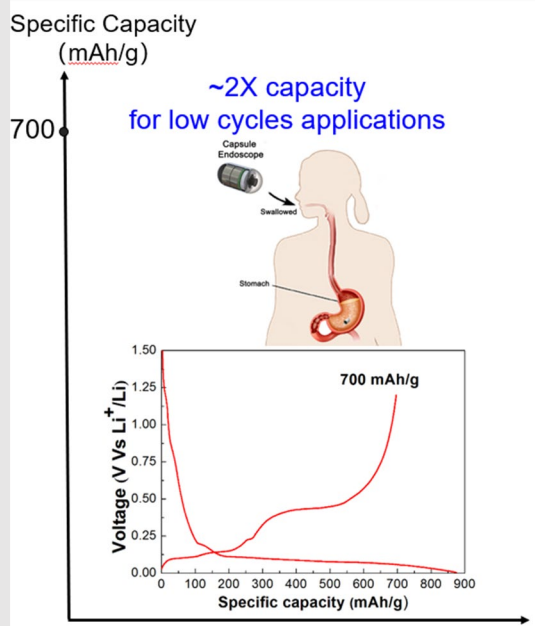
Key features include:

- **Nano-size Si** aggregate provides **fast Li ions diffusion** pathways;
- **Micro-size C-based conglomerate** accommodates volumetric expansion of Si and maintains the integrity of anode;
- **Environmental-friendly** and **low-cost process**.

Key impact

- **Pain relief** and **easy to swallow** due to reduced size;
- High capacity enables **high resolution imaging**;
- Supports pre-tune of medical device and **achieves high accuracy**.

Innovation snapshot



Project completed

- 2019

Applications

- Disposable medical capsule

Patent(s)

- US Patent No. 10,608,226

[ASTRI Patent Search](#)

Commercialisation Opportunities

- IP licensing
- Technology co-development

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