

Self charging
sodium ion
battery for
wearable insulin
pods (omnipods)



Reason for Recall

Flammable, overheating & releasing toxic gas on burning.

Insulet is recalling the Omnipod DASH Insulin Management System's Personal Diabetes Manager (PDM) software for certain groups of PDM. Battery issues including:

- Battery swelling
- Fluid leakage from the battery
- That's why Li batteries must be replaced in these pods.
- Extreme overheating that may pose a fire hazard

Users could be exposed to battery fluid and extreme heat, including the potential for an explosion and/or fire, which could lead to serious injury or death.

Insulet reports 455 complaints involving these battery issues, including three fires. There have been no reports of injuries or deaths.

The background image features a periodic table element card for Sodium (Na) on the left, showing its atomic number 11 and atomic weight 22.990. To the right and in front of the card are three blue cylindrical sodium-ion batteries. One battery is lying horizontally in the foreground, while two others stand vertically in the background. The batteries are labeled with 'Sodium-ion Battery', '1500 mAh', and '3.7 V'.

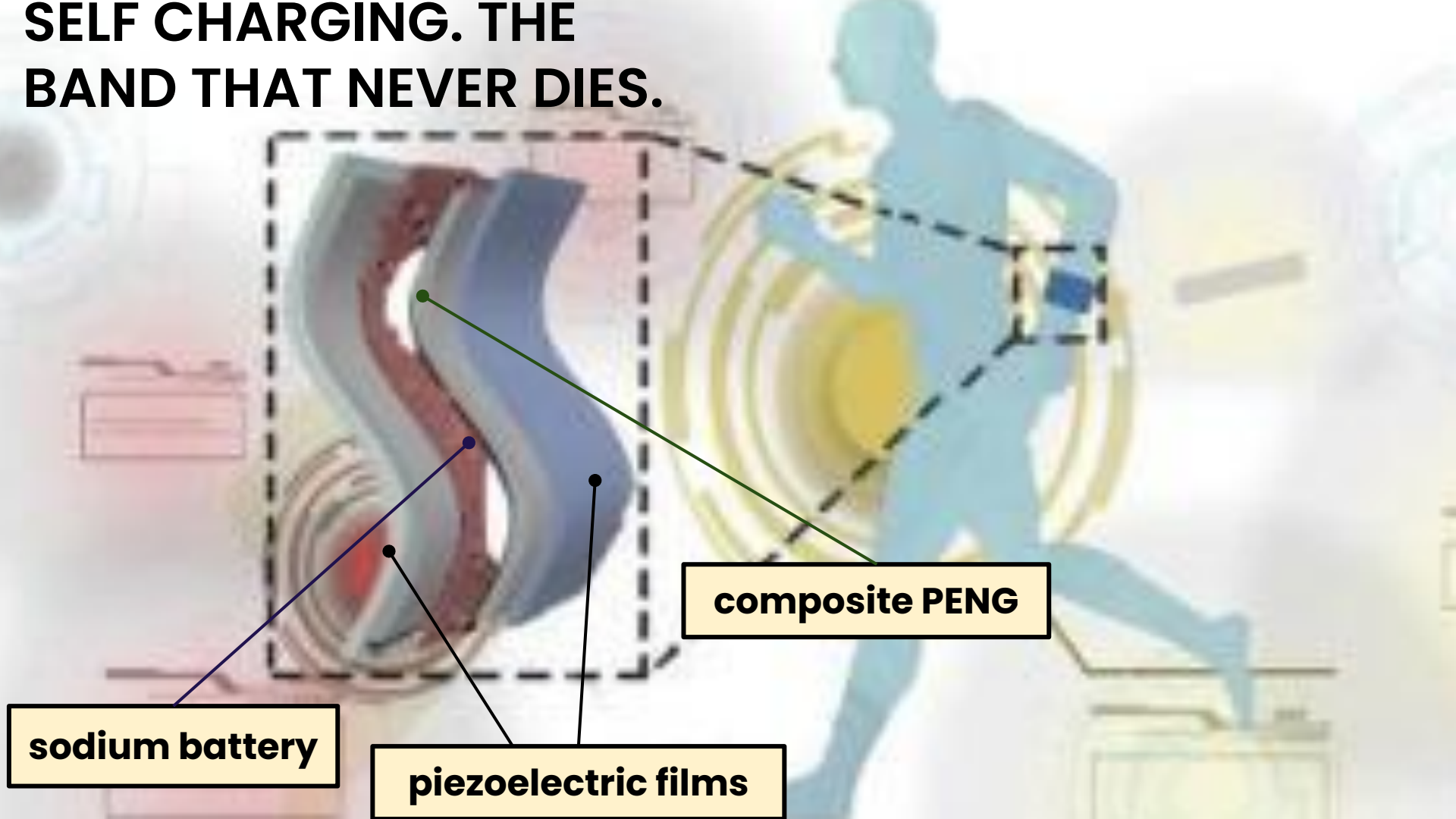
sodium batteries

*Self charging, flexible, safer- nonflammable,
less toxic on burning, **cost effective**,
environmentally friendly*



Lithium-ion → Na-ion ~ 60% cost ↓

SELF CHARGING. THE BAND THAT NEVER DIES.



sodium battery

piezoelectric films

composite PENG

Lighter weight. More energy.

properties and perks.

Flexible outer layers, upon the application of regenerative static mechanical stress.

Reduced dependency on electrical chargers, mitigated environmental and personal safety risk for patients.

Charged by 0.65 V just from random bending.

Safe. Convenient. Accessible.

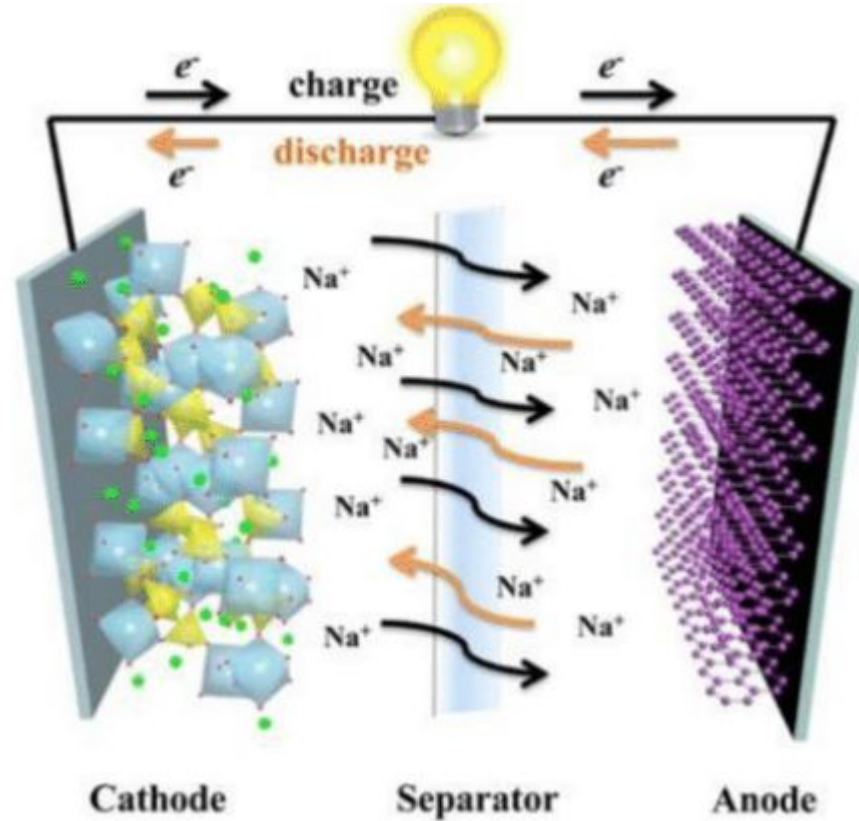
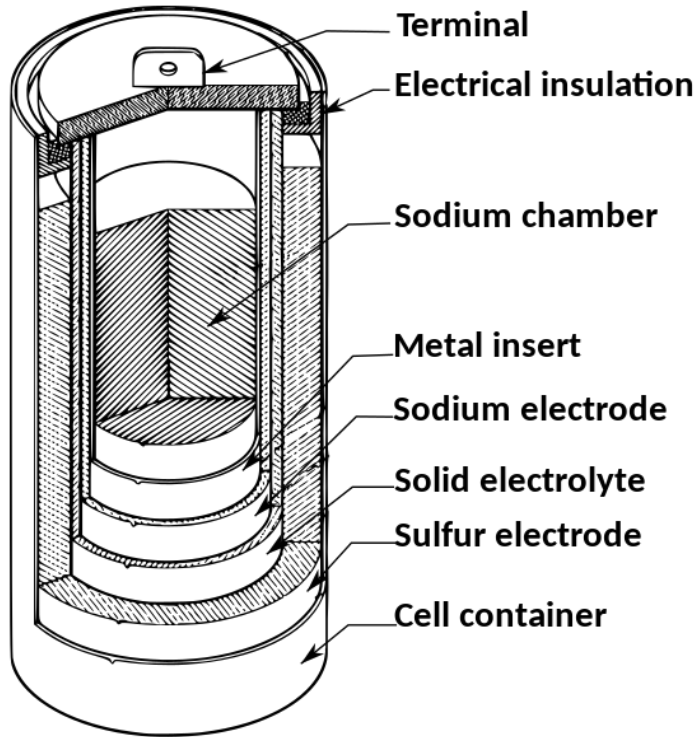


SHOT ON VSMART ARIS

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N-doped Carbon + low solvation energy → High electric dipole → +250 Wh kg⁻¹

static mockup.





Problems to overcome in the next 3 years

- level of energy density ↑
 - cycle life ↑
- Power output per unit mass ↑
- maximum operating voltage ↑



Thank you!

By Vibhuti, Annika & Rishikesh.