



Porous silicon architecture could give lithium batteries a boost in energy density

Safe, high energy-density batteries are sought in several areas such as electric vehicles and energy storage systems on board ships. While the hunt for new battery chemistries remains the focus of intense research, new battery structures could also improve performance.

XNRGI (US) has developed a new battery architecture that they claim could significantly boost energy density. The batteries are made by etching honeycombs onto a silicon wafer using standard semiconductor processing techniques. To produce the electrodes, the porous honeycombs are then coated with lithium and other metals, resulting in numerous microscale batteries on each wafer. While state-of-the-art lithium ion batteries have energy densities in the range of 250Wh/kg, the company claims their solution will yield energy densities up to 400Wh/kg.

XNRGI describes the resulting improved energy density and lifetime of their batteries, and say that they will be available for half the price of alternatives. They plan to sell their batteries to utility companies as soon as 2020 for grid storage, along with developing smaller scale cells for portable devices.