Virus-enabled silicon anode for lithium-ion batteries.

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Abstract: A novel three-dimensional Tobacco mosaic virus assembled silicon anode is reported. This electrode combines genetically directed self-assembly, a one-step deposition process, and a mesoporous structure to create a high-capacity electrode. The silicon nanowires grown on a flexible substrate are decorated with a two-dimensional layer of Tobacco mosaic virus. The virus acts as a nanoscale 3D template. This electrode is shown to deliver a nearly 10-fold increase in capacity over currently available graphite anodes with remarkable cycling stability.
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