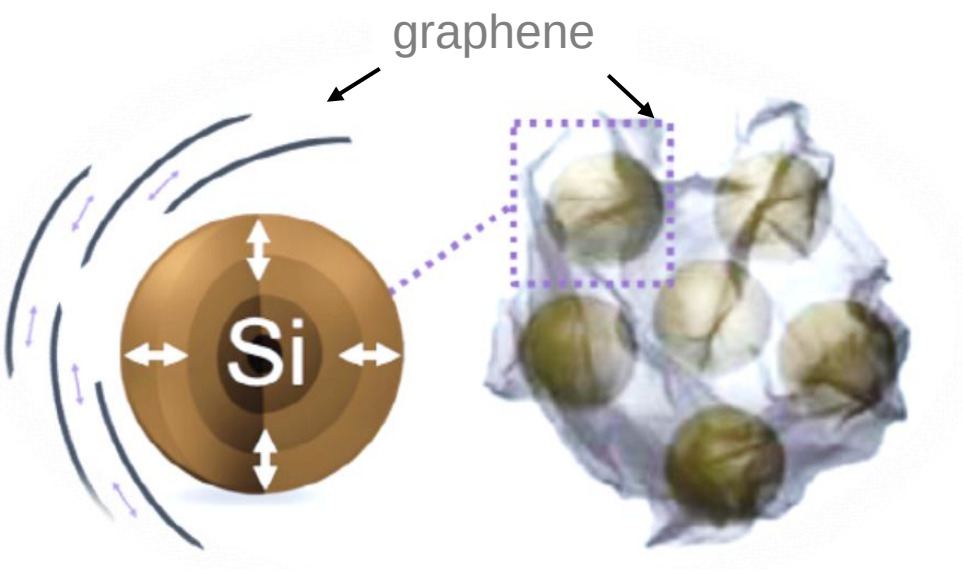
SiNode Systems founding team in Times Square after ringing the NASDAQ closing bell in April 2013

Among clean-tech startups, SiNode Systems Inc. needs little technical introduction because its products address an obvious need in today's market, a need anybody can agree on – a faster charging, longer lasting lithium ion battery. Lithium ion batteries are the go-to battery type for most consumer and home electronics, due to their high energy density and low self-discharge. The electric vehicle market is perhaps set to be the biggest consumer of rechargeable lithium ion batteries, with most newer plug-in hybrids and all-electric vehicles opting to use them over the nickel-metal hydride batteries used in older hybrid vehicles.

Addressing this global demand, SiNode produces an advanced composite material made of silicon and graphene, which enables higher performing lithium-ion batteries for electric vehicles and many consumer electronic applications. The company stands out for its remarkable birth story. It was founded in 2012 by a multidisciplinary team of students fresh out of an energy and entrepreneurship course offered by Northwestern University. It wasn't long before the company received its first Department of Energy Small Business Innovation Research (SBIR) grant.



Structure of SiNode silicon-graphene composite anode material

PHASE III SUCCESS
At the end of Phase II SiNode was awarded a $4 million contract by the United States Advanced Battery Consortium LLC with 50% DOE cost share.

IMPACT
SiNode's anode material, which is based on a technology developed at Argonne National Laboratory and Northwestern University, enables lithium-ion batteries to charge faster and last 40% longer.

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"We succeeded in writing a sound business plan and, at the end of the class decided to apply for the DOE SBIR award," said Samir Mayekar, one of the graduate students on the Northwestern University's team, now CEO of SiNode.

SiNode's core technology was developed at one of the Department of Energy's (DOE) Energy Frontier Research Centers (EFRCs), the Center for Electrical Energy Storage (CEES) at Argonne National Laboratory (in partnership with Northwestern University) and allows a battery to store a greater amount of lithium, thereby charging faster and lasting longer than conventional batteries.

Current graphite-based anodes offer a capacity of 372 mAh/g, while SiNode's material can be customized to achieve capacities between 1000 mAh/g and over 2500 mAh/g, delivering higher cell level energy density. In addition, in-plane nano-engineered porosity is introduced to the graphene layers, allowing rapid ionic diffusion through the structure for faster charging.

SiNode's success and competitive advantage over similar firms is due to several factors. First of all, both the chemical elements (C and Si) and the process used to assemble the anode material are low-cost. In addition, the new anode material can be easily incorporated in the existing battery design, without modifying the production process. Finally, SiNode was conceived with a defined customer focus. The relationship with customers started when the team was still in the Commercialization Lab at Northwestern University and the company was built to address customer's needs from the very beginning. "Customers saw value in what we were proposing and were willing to fund us in order to have access to our technology before their competitors", Mr. Mayekar explained.

The customers Mr. Mayekar refers to are top tier consumer electronics and automotive companies, which became interested in SiNode once the team of young entrepreneurs won the DOE Small Business Innovation Research (SBIR) award. "This is because the SBIR award gave us that stamp of approval big

companies were looking for before they started talking to us" said Mr. Mayekar. "The SBIR award gave us not only the credibility needed to enter the electric vehicle battery field" continued Mr. Mayekar; "It also provided the catalytic funds necessary to spin out of the University, to acquire office space and hire our first full time employees. SBIR was indispensable to bridge the gap to the market, and without it SiNode would not be where we are today". Funding for SiNode's SBIR Award was provided by the EERE Vehicle Technology Office (VTO).

Today, at the conclusion of the Phase II SBIR award, SiNode has 15 employees and exports 90% of their product to Japan and Korea. The company has received follow-on investments and revenues amounting to over 5 times the original DOE SBIR investment. These include a $4 million contract awarded by the United States Advanced Battery Consortium LLC (USABC), a collaborative organization of FCA US LLC, Ford Motor Company and General Motors with a 50% cost-share funded by DOE.

SiNode products are currently being assembled and tested in batteries for electric vehicles, smartphones and other applications in partnership with various corporations. Once in the market, the first generation SiNode anode will deliver a 40 % increase in battery energy density, translating into increased range for an electric car or usage time for a smartphone.

Written By Claudia Cantoni, Commercialization Program Manager, DOE SBIR/STTR