

Startup SiGNa Chemistry Solves Alkali Metals Volatility To Revolutionize Modern Industrial Processes

Sets sights on \$10 billion micro fuel cell market, pharmaceuticals, and petrochemicals

New York, NY – June 14, 2005 – Convenient, cost-effective sources of hydrogen were traditionally difficult to produce, which created a barrier to the widespread adoption of fuel cells to power portable electronic devices. Now, advanced materials startup SiGNa Chemistry, LLC has developed a product that generates copious amounts of inexpensive, clean hydrogen from water. This technology, which represents the first advancement in alkali metals processing in more than a century, will also streamline many other industrial processes from drug manufacturing to petroleum refining to environmental restoration.

SiGNa Chem's core technology is nanoencapsulation of alkali metals into porous oxides. Alkali metals readily donate electrons to produce chemical reactions that are highly useful throughout science and industry. However these metals are also extremely dangerous to store and handle, with a tendency to burst into flames when exposed to moisture or air. SiGNa's patent-pending technology produces inert, safe-to-handle powder from alkali metals and silica gel. These powders react controllably, with different stages of predictable activation to suit industry protocols.

"Alkali metals have been used by chemists for well over 100 years," said Michael Lefenfeld, SiGNa Chem CEO and Chief Scientific Officer. "However, their use has been limited by their pyrophoric (spontaneously combusting) qualities. We were originally developing a consumer product that would have benefited from this type of reduction reaction, but then realized that the market is much larger for a user-friendly form of the alkali metals themselves."

In addition to the functional efficiencies of alkali metal reduction reactions, the SiGNa Chem products avoid the substantial costs associated with storing and handling pyrophoric substances, including safety equipment and procedures, insurance and regulatory compliance.

Pharmaceutical manufacturing is one large-scale market for SiGNa Chem materials. "Right now, pharma is designing multiple steps in its manufacturing processes to avoid using a single alkali reduction step, because they are apprehensive about the hazardous nature of the reagent," Lefenfeld said. "We're changing that mindset; some big companies are evaluating our material, and we're very optimistic about the outcome."

The predictable reactivity and benign nature of SiGNa's product also makes it ideal for consumer applications. SiGNa has chosen the micro fuel cell market as an important initial target in its commercialization efforts.

"In five years, nearly a quarter of all handheld electronic devices worldwide are predicted to be powered by micro fuel cells," Lefenfeld said. "There's tremendous appeal in adding a powder to water to power a laptop computer for 10 hours."

SiGNa Chem has sold evaluation quantities to major petrochemical companies, and the world's largest chemical supply house will serve as a distribution channel. The July 2005 *Journal of the American Chemical Society* (JACS) will feature SiGNa Chem's innovative work, as well as this month's premiere issue of *Materials Engineering News*.

About SiGNa Chemistry, LLC.

SiGNa Chemistry is an early-stage company developing unique solutions to compelling chemistry problems through the power of interdisciplinary science. SiGNa is positioned to develop and deliver a host of solutions to a wide range of scientific applications and industries. The company's advanced materials will deliver new products to academic and industrial markets as diverse as pharmaceutical synthesis, petroleum refining, organometallics, catalysis, and hydrogen energy. For more information:

<http://www.signachem.com>.

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