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### **SAFCeCell Selected for \$3.7 Million ARPA-E Award**

*Funding Aims to Develop Breakthrough Intermediate Temperature Fuel Cells for Distributed Generation*

Pasadena, CA - SAFCell, Inc. was selected for a \$3.7 million Advanced Research Projects Agency – Energy (ARPA-E) award to develop an intermediate temperature fuel cell for low-cost distributed power generation. SAFCell, a Caltech start-up fuel cell company, was one of 13 projects funded under ARPA-E's \$33 million Reliable Electricity Based on Electrochemical Systems (REBELS) program, which is focused on improving grid stability, balancing intermittent renewable technologies, and reducing CO<sub>2</sub> emissions using electrochemical distributed power generation systems.

Under the REBELS program, SAFCell was selected to develop solid acid fuel cells (SAFCs) that will operate at 250°C and are nearly free of precious metal catalysts. The team will dramatically lower system costs by reducing precious metals, such as platinum, from the electrodes and developing new catalysts based on carbon nanotubes and metal organic frameworks. The proposed SAFC stack design will lead to the creation of fuel cells that can withstand common fuel impurities, making them ideal for distributed generation applications.

“We are extremely excited to receive this award and have the opportunity to fast-forward our technology into the residential power market,” said SAFCell CEO and Founder, Dr. Calum Chisholm. “Not only is the residential market one of the biggest for fuel cells, it also represents one of the best ways of increasing overall grid efficiency and robustness, with small distributed power sources allowing for greater adoption of renewable energy systems.”

Fuel cell systems convert energy from fuels into electrical power. At the core of each fuel cell is a special material, called the electrolyte, which allows the production of electricity through efficient electrochemical processes, as opposed to typical fuel combustion. The composition of the electrolyte differentiates one fuel cell type from another. SAFCell's technology is based on a new class of solid electrolytes called solid acids that operate at intermediate temperatures, whereas current fuel cell research focuses on technologies that operate at either high temperatures for stationary applications, or at low temperatures for mobile applications.

SAFCell, Inc. develops solid acid fuel cell stacks that are scalable from tens to thousands of watts, and can tolerate commercially available fuels such as propane, natural gas, or diesel. Operating at mid-range temperatures around 250°C, SAFCell's stacks are rugged and fuel flexible, which reduces system complexity and cost, making possible a range of commercial applications. SAFCell was recently awarded a \$1 million Army grant to develop man-portable power systems and received the *Los Angeles Business Journal's* 2013 Patrick Soon-Shiong Innovation Award.

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