IBM research boosts long-range, air-powered electric battery project

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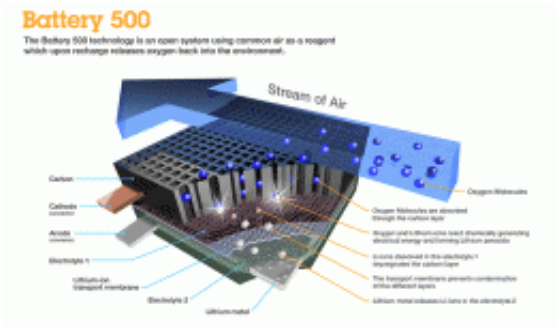

(Phys.org) -- IBM announced that two industry leaders -- Asahi Kasei and Central Glass -- will join its Battery 500 Project team and collaborate on far-reaching research with the potential to accelerate the switch from gasoline to electricity as the primary power source for vehicles.

In 2009, IBM Research pioneered a sustainable mobility project to develop lithium-air battery technology capable of powering a family-sized electric car for approximately 500 miles (800 km) on a single charge.

As partners in the Battery 500 Project, Asahi Kasei and Central Glass bring decades of materials innovation for the automotive industry to the

team. They will expand the project's scope and, although the scientific and engineering challenges to its practical implementation are extremely high, exploring several chemistries simultaneously increases the chance of success.

· Asahi Kasei, one of Japan's leading chemical manufactures and a leading global supplier of separator membrane for lithium-ion batteries, will use its experience in innovative membrane technology to create a critical component for lithium-air batteries.

· Central Glass, a leading global electrolyte manufacturer for lithium-ion batteries, will use its chemical expertise in this field to create a new class of electrolytes and high-performance additives specifically designed to improve lithium-air batteries.

"These new partners share our vision of electric cars being critical components of building a cleaner, better world, which is far less dependent on oil," said Dr. Winfried Wilcke, IBM's Principle Investigator who initiated the Battery 500 Project. "Their compatible experience, knowledge and commitment to bold innovation in electric vehicle battery technology can help us transfer this research from the lab onto the road."

Most electric vehicles can only travel about 100 miles before needing to recharge using today's lithium-ion batteries. This is a significant barrier to electric car adoption unless a new battery technology can be developed that is affordable, lightweight, compact and has the capacity to power a typical family car several hundred miles or more on a single charge.

For a car running on today's lithium-ion batteries to match the range provided by a tank of gasoline, car manufacturers would need a very large battery which would weigh down the car and take up too much

space. Lithium-air batteries have higher energy density than lithium-ion batteries, due to their lighter cathodes and the fact that their primary "fuel" is the oxygen readily available in the atmosphere. To popularize electric cars, an energy density ten times greater than that of conventional lithium-ion batteries is needed, and these new partners to the project can help drive lithium-air technology towards that goal.

New materials development is vitally important to ensuring the viability of lithium-air battery technology," said Tatsuya Mori, Director, Executive Managing Officer, Central Glass. "As a long-standing partner of IBM and leader in developing high-performance electrolytes for batteries, we're excited to share each other's chemical and scientific expertise in a field as exciting as electric vehicles."

"We are very focused on addressing environmental challenges and limitations with diverse technology to build a brighter future. This alliance allows us to explore a new path to developing an improved rechargeable battery performance that can not be met with conventional technologies," said Tetsuro Ohta, Head of Advanced Battery Materials Development Center, Asahi Kasei.

This research will take place at IBM Research – Almaden in California.

Provided by IBM