

Lab Results Further Validate Liquid Light Technology

Process efficiency, use of intermittent renewable energy, and production of additional target chemical described in peer-reviewed publication

Monmouth Junction, NJ, July 15, 2014 – <u>Liquid Light</u> announced highlights from a recent paper in the peer-reviewed <u>Journal of CO₂ Utilization</u> which provides further validation for key aspects of Liquid Light's technology. The paper detailed the results of experiments based on Liquid Light's technology by a team affiliated with the Department of Chemistry at Princeton University. While focused on the efficient conversion of carbon dioxide to fuel using sunlight, the paper also validated multiple aspects of Liquid Light's technology, including:

- High process efficiency: Results were as much as nine times better than the best previously reported results by industry or research labs, for converting solar energy to formates. The conversion efficiency was also about twice as high as natural photosynthesis, which has been the benchmark for converting sunlight to target chemicals. The portion of the experiment that measured cell efficiency also supported the high expected efficiency for electrocatalytic conversion of CO₂ to other chemicals (such as ethylene glycol) using Liquid Light's technology.
- Efficient use of an intermittent, renewable source of energy: The team used a standard solar panel to power the set of electrocatalytic reaction cells. The project confirmed that renewable power, in this case solar, worked as a power source, and that the intermittent, sometimes-unpredictable nature of renewable sources did not negatively impact process efficiency.
- Ability to adjust catalysts to make varying target chemicals: This project used Liquid Light catalysts and reactors (cells) designed specifically to produce formates (rather than, for example, the company's first commercial target of ethylene glycol, produced via an oxalic acid intermediate). This confirmed that Liquid Light's underlying technology could produce compelling results across more than one target chemical.

The paper, 'Photons to formate: Efficient electrochemical solar energy conversion via reduction of carbon dioxide,' was written by James L. White, Jake T. Herb, Jerry J. Kaczur, Paul W. Majsztrik, and Andrew B. Bocarsly.

"The work performed in collaboration with Professor Bocarsly's lab in the Department of Chemistry at Princeton further demonstrates the broad applicability of Liquid Light's technology," said Kyle Teamey, CEO of Liquid Light. "Meanwhile, our primary focus continues to be commercialization of our process technology for converting CO₂ to major chemicals, starting with ethylene glycol. Our next steps are to continue to scale up, working with industry partners."

About Liquid Light

<u>Liquid Light</u> develops and licenses <u>process technology</u> to make major chemicals from low-cost, globally-abundant carbon dioxide (CO₂). Customers profit from a lower cost of production, while harnessing their current waste stream; reduce their dependence on cyclically-priced petroleum feedstocks; and can reduce their carbon footprint.

Liquid Light's first process is for the production of ethylene glycol (MEG), with a \$27 billion annual market. Results consistent with <u>cost-advantaged production</u> have been validated at lab scale for key parts of our process; and the process scales in a predictable manner, akin to world-scale chlor-alkali plants.

Liquid Light's core technology is centered on low-energy catalytic electrochemistry to convert CO_2 to multi-carbon chemicals. It is backed by more than 100 patents and applications, and extends to multiple chemicals with large existing markets, including ethylene glycol, propylene, isopropanol, methylmethacrylate and acetic acid.

Liquid Light's investors include VantagePoint Capital Partners, BP Ventures, Chrysalix Energy Venture Capital, and Osage University Partners.

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