

NEWS RELEASE

Advent Technologies, GM, Toyota, and Los Alamos National Laboratory Highlight the Benefit of High-Temperature PEM Fuel Cells in New Scientific Publication

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Joule article highlights the need for Advent's next-generation fuel cell technology to increase payload space, fast fueling and adequate fuel storage for long-range applications by relying on liquid hydrogen carriers

BOSTON--(BUSINESS WIRE)-- Advent Technologies Holdings, Inc. (NASDAQ: ADN) ("Advent") today announced that an article co-authored by a group including Dr. Emory De Castro, Advent Technologies' Chief Technology Officer, has been published in Joule, A Cell Press journal. The article presents the group's perspective on near-, mid-, and long-term targets for proton conductors of heavy-duty fuel cells.

In addition to De Castro, the article was led by Craig S. Gittleman, Global Fuel Cell Business at General Motors, and included Hongfei Jia, Material Research Department at Toyota Research Institute of North America, Calum Chisholm, SAFCell, and Yu Seung Kim, Research Scientist at Los Alamos National Laboratory.

The article is titled "Proton Conductors for Heavy-Duty Vehicle Fuel Cells" and can be found in full at Joule 5, 1–18, July 21, 2021. The summary of the article can be found below:

> Fuel cells utilize the chemical energy of liquid or gaseous fuels to generate electricity. As fuel cells extend their territory to include heavy-duty vehicles, new demands for proton conductors, a critical component of fuel cells, have emerged. A near-term need is ensuring the chemical and mechanical stability of proton exchange membranes to enable long lifetime vehicles. In the mid-term, achieving stable conductivity of proton conductors under hot (>100°C) and dynamic fuel cell operating conditions is desirable. In the long term,

targeting high thermal stability and tolerance to water enables the utilization of high energy density liquid fuels that will increase payload space for heavy-duty vehicles.

"We are thrilled that our article was approved for submission in Joule," commented De Castro. "The article highlights the need for Advent's fuel cell technology due to our high-temperature proton exchange membrane ("HT-PEM") fuel cells that leads to fulfilling our flexible 'Any Fuel. Anywhere.' option. Through the adoption of liquid fuel hydrogen carriers, Advent's technology will bridge the gap in the timeline for developing a hydrogen infrastructure while offering fast fueling, increased payload space and adequate fuel storage for long-range applications in the automotive, maritime, aviation and power generation sectors."

Joule, a sister journal to Cell, is a home for outstanding and insightful research, analysis and ideas addressing a key global challenge: the need for more sustainable energy. The journal is a distinctive and forward-looking journal, bridging disciplines and scales of energy research. Joule connects all who are researching and analyzing the challenges — scientific, technical, economic, policy and social — of providing sustainable energy solutions.

About Advent Technologies Holdings, Inc.

Advent Technologies Holdings, Inc. is a U.S. corporation that develops, manufactures, and assembles critical components for fuel cells and advanced energy systems in the renewable energy sector. Advent is headquartered in Boston, Massachusetts, with offices in the San Francisco Bay Area and Europe. With 120-plus patents issued (or pending) for its fuel cell technology, Advent holds the IP for next-generation high-temperature proton exchange membranes ("HT-PEM") that enable various fuels to function at high temperatures under extreme conditions – offering a flexible "Any Fuel. Anywhere." option for the automotive, maritime, aviation and power generation sectors. For more information, please visit **www.advent.energy**.

Cautionary Note Regarding Forward-Looking Statements

This press release includes forward-looking statements. These forward-looking statements generally can be identified by the use of words such as "anticipate," "expect," "plan," "could," "may," "will," "believe," "estimate," "forecast," "goal," "project," and other words of similar meaning. Each forward-looking statement contained in this press release is subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statement. Applicable risks and uncertainties include, among others, the Company's ability to maintain the listing of the Company's common stock on Nasdaq; future financial performance; public securities' potential liquidity and trading; impact from the outcome of any known and unknown litigation; ability to forecast and maintain an adequate rate of revenue growth and appropriately plan its expenses; expectations regarding future expenditures; future mix of revenue and effect on gross margins; attraction and retention of qualified directors, officers, employees and key personnel; ability to compete effectively in a competitive industry;

ability to protect and enhance our corporate reputation and brand; expectations concerning our relationships and actions with our technology partners and other third parties; impact from future regulatory, judicial and legislative changes to the industry; ability to locate and acquire complementary technologies or services and integrate those into the Company's business; future arrangements with, or investments in, other entities or associations; and intense competition and competitive pressure from other companies worldwide in the industries in which the Company will operate; and the risks identified under the heading "Risk Factors" in our Annual Report on Form 10-K/A filed with the Securities and Exchange Commission on May 20, 2021, as well as the other information we file with the SEC. We caution investors not to place considerable reliance on the forward-looking statements contained in this press release. You are encouraged to read our filings with the SEC, available at **www.sec.gov**, for a discussion of these and other risks and uncertainties. The forward-looking statements in this press release speak only as of the date of this document, and we undertake no obligation to update or revise any of these statements. Our business is subject to substantial risks and uncertainties, including those referenced above. Investors, potential investors, and others should give careful consideration to these risks and uncertainties.

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