



FOR IMMEDIATE RELEASE

CO₂ CAPTURE IN WATER WELL BEYOND THE HENRY'S LAW LIMIT

**DR. KIM MCAULEY OF QUEEN'S UNIVERSITY PRESENTS
AT CANADIAN CHEMICAL ENGINEERING CONFERENCE**

October 23, 2017

MASSACHUSETTS / ALBERTA / ONTARIO – Tom Thompson, Chairman and CEO of Enviro Innovate Corporation is pleased to announce that Dr. Kim McAuley presented today at the Canadian Chemical Engineering Conference, organized by the Chemical Institute of Canada at the Shaw Conference Centre in Edmonton, Alberta, Canada. Dr. McAuley presented the results of a CO₂ capture modeling project, under the category of "Carbon Reduction and Utilization".

The presentation introduced the mathematical modelling of four CO₂ capture mechanisms behind Enviro Innovate's process of removing CO₂ from flue gas using micron-size water droplets, without the use of a solvent. In particular: the formation of H₂CO₃ and its ions; CO₂ adsorption/absorption at the water vapour interface; and H₂CO₃ accumulation at the water vapour interface.

A sensitivity analysis was performed on the model to study the influence of the following parameters on CO₂ removal: the CO₂ interfacial partition coefficient; the H₂CO₃ interfacial partition coefficient; the droplet size and velocities; temperature; and, the flue gas condition.

The sensitivity analysis supported experience that the capture rate: increases as droplet sizes decrease; increases as temperature decreases. The model, sensitive to the interfacial coefficients, supports: substantially more CO₂ capture by the water droplets than posited by Henry's Law; and the high experienced capture rates (80+ percent) of Enviro Innovate's process.

Continued experimental and modelling work is planned to expand the current model.

About Dr. Kim McAuley

Dr. McAuley is a Professor of Chemical Engineering at Queen's University where she serves as Associate Dean of Graduate Studies. Dr. McAuley earned her B.A.Sc. from the University of Waterloo and her Ph.D. from McMaster University. With her graduate students and postdoctoral fellows, Dr. McAuley develops mathematical models for a wide range of chemical production biochemical processes. These

models are used to predict product quality, production rates and the effectiveness of operating and control systems. Dr. McAuley's group has developed novel statistical methods for determining appropriate values for kinetic, thermodynamic and mass-transfer parameters that appear in model equations. These methods are used for selecting and tuning model parameters so that model predictions match the behavior of industrial processes. Dr. McAuley has developed models for leading international companies including Abbott Point of Care, BASF, DSM, DuPont, Exxon, INEOS, NOVA Chemicals, Praxair and Shell. She was Associate Editor for Chemical Engineering Journal and serves on the International Advisory Boards for Macromolecular Theory & Simulations and Macromolecular Reaction Engineering and the Board of Directors for the Fields Institute for Research in Mathematical Sciences. Dr. McAuley has received a Queen Elizabeth II Diamond Jubilee Medal for her modeling research.

About Queen's University

Queen's is one of Canada's oldest degree-granting institutions, and has influenced Canadian higher education since 1841 when it was established by Royal Charter of Queen Victoria. Located in Kingston, Ontario, Canada, it is a mid-sized university with several faculties and schools, as well as the Bader International Study Centre located in Herstmonceux, East Sussex, United Kingdom. Queen's balances excellence in undergraduate studies with well-established and innovative graduate programs, all within a dynamic learning environment. A member of the U15 group of Canadian research universities, Queen's is a full-spectrum, research-intensive university that conducts leading-edge research in a variety of areas and is home to Dr. Art McDonald, co-recipient of the 2015 Nobel Prize in Physics.

About Enviro Innovate

Enviro Innovate spearheads an international clean-tech accelerator that continues to attract startups and established enterprises looking to commercialize or acquire innovative technologies. Enviro Innovate, in collaboration with Queen's University, Enviro Ambient, Air Liquide, Carbonomics, the Cement Association of Canada, E. I. DuPont Canada Company, Foley Hoag, Kingston Process Metallurgy, McAllister & Quinn, and Advisian / WorleyParsons, is able to draw on the experience and expertise of a multitude of relationships and resources to assist early-stage companies to commercialize next-generation, globally-applicable, clean-tech products. Please visit www.enviroinnovate.com.

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