

UBC researchers go exploring for breakthrough energy technologies

Four academic laboratories partner with Google to explore how materials science can help make fusion more accessible



UBC team pictured above, left to right: Brian Lam, Ben MacLeod, Rebecca Sherbo, Noah Johnson, Lacey Reid, Curtis P. Berlinguette, James Grayson, Ryan Jansonius, Ken Hu, Adam Bottomley, Fraser Parlane, Phil Schauer. Photo credit: Matt Trevithick

Scientists from the University of British Columbia, the Massachusetts Institute of Technology, the University of Maryland, the Lawrence Berkeley National Laboratory, and Google are conducting a multi-year investigation into cold fusion, a type of benign nuclear reaction hypothesized to occur in benchtop apparatus at room temperature.

A progress report published today in [Nature](#) publicly discloses the group's collaboration for the first time.

The group, which included about 30 graduate students, postdoctoral researchers and staff scientists, has not yet found any evidence of the phenomenon, but they did find important new insights into metal-hydrogen interactions that could impact low-energy nuclear reactions. The team remains excited about investigating this area of science and hopes their ongoing journey will inspire others in the scientific community to contribute data to this intriguing field.

Operating as a "peer group" with a stringent internal review process, the team started out by vetting previous claims of cold fusion, which have not been pursued in mainstream academic research for the past 30 years. If cold fusion could be realized, the heat released by this process might offer an attractive option for decarbonizing the global energy system.

The collaborative effort has produced nine peer reviewed publications and three arXiv posts. The team continues to search for a reproducible reference experiment for cold fusion.

Read the full perspective in Nature: ["Revisiting the cold case of cold fusion,"](#) Curtis P. Berlinguette (UBC), Yet-Ming Chiang (MIT), Jeremy N. Munday (UMD), Thomas Schenkel (Berkeley Lab), David K. Fork, Ross Koningstein and Matthew D. Trevithick (Google.)

Quotes from the UBC team

"We need a fundamentally new energy technology that can be scaled within the span of a human lifetime. Achieving this goal requires scientists to do daring work. This Nature Perspective celebrates the brave team of young researchers across four institutions that were willing to do so. I hope their leadership inspires the next generation of scientists to be explorers."

– Professor Curtis P. Berlinguette, Principal Investigator

"We accepted the risk to re-investigate a field that was put off limits. Finding radical and immediate solutions to climate change is just too important."

– Dr. Phil Schauer, Postdoctoral Researcher

"Working in such a controversial area highlighted the need for us to not make assumptions and to put an error bar on every data point."

– Ben MacLeod, PhD Candidate

"It was a privilege to work together with an exceptional cast of researchers from different fields to carefully test claims of cold fusion and to identify new research directions. We didn't find cold fusion, but it was rewarding to discover new science."

– Dr. Brian Lam, Postdoctoral Researcher

"Our discoveries in areas of science outside our traditional realms of expertise is a testament to the creativity fostered through collaborative research."

– Fraser Parlane, PhD Candidate

"I joined this program because of my desire to work in clean energy, and the potential impact of the research. The peer group served as cover to explore the unknown while still providing a forum for productive collaborations with a diverse group of researchers."

– Ryan Jansonius, PhD Candidate

"Doing fundamental materials science research that could result in a transformative energy technology was a risk worth taking. As a result of this program, I was able to work with an amazing team and take my research in new, unexpected directions. "

– Rebecca Sherbo, PhD Candidate