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# ingenuity

Faculty of Applied Science  
Engineering News

## Wood pellets—

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### Nuggets of green energy

As temperatures dive and natural-gas costs soar, perhaps you are considering the purchase of a wood-pellet stove. But you wonder, is this an environmentally friendly choice?

The answer is yes.

According to Chemical and Biological Engineering Professor Xiaotao (Tony) Bi, wood pellets are the best choice for residential heating.

“In an isolated environment, when only the emissions from the burning fuel are analyzed, natural gas appears to be a cleaner option,” says Bi. “But when you factor in the entire life cycle of natural gas—a fossil fuel—with that of engineered wood pellets, which come from a renewable resource, the pellets are a far better environmental choice. They’re clean, and they’re sustainable.”

Environmentally speaking, wood pellets are an ideal fuel for industry and district heating.

Waste-wood materials, such as sawdust, are bound into pellets in a high-temperature pelletization process; no additives or glues are used. No new trees are cut down to create pellets, and pelletization is a beneficial use of trees killed by the mountain pine beetle.

Engineered pellets have a uniform size and moisture content and can be cleanly burned in specially designed automatic pellet furnaces, unlike wood logs or wood residues in traditional wood furnaces. Wood pellets have been endorsed by the U.S. Environmental Protection Agency and are one of the cleanest-burning and most renewable energy sources on Earth.

Bi, an expert in fluid-particle systems and multiphase reactors, is part of UBC’s Biomass and Bioenergy Research Group (BBRG), a multidisciplinary team that collaborates with industry and government to meet the needs of the emerging bioeconomy. Over the past five years, the BBRG has grown from three members to



Tony Bi reflects upon engineered wood pellets.

15. The group collaborates extensively with the Wood Pellet Association of Canada (WPAC) to engineer a better pellet.

Bi conducts life-cycle analyses—evaluations of the environmental and social impacts of a given product or services caused by or required for their existence—to investigate the health and environmental concerns of pellet burning and improve the environmental performance of pellet making, transportation and distribution.

His research team works to quantify net carbon dioxide emissions and investigate the gases that pellets emit during storage and transportation, to help prevent fires and ensure good air quality for workers exposed to pellets. In addition, the group works to improve the energy density and durability of pellets, using various multiphase processes to produce

# Dolby establishes professorship in Electrical and Computer Engineering

With a generous gift of \$400,000 to the Faculty of Applied Science, Dolby Laboratories, Inc. has established the Dolby Professorship in Digital Multimedia in the Department of Electrical and Computer Engineering (EECE).

EECE Associate Professor Panos Nasiopoulos has been named the inaugural holder of the endowed professorship, which will support his research into devices capable of capturing, compressing and delivering high-dynamic-range (HDR) images.

With hundreds of small light-emitting diodes, HDR technology replaces the single backlight in a typical LCD screen and provides contrast up to 500 times greater than that of the most advanced LCD and plasma TVs currently on the market.

HDR was invented at UBC and led to the establishment of BrightSide Technologies, which was recently acquired by Dolby.

“The multimedia and entertainment sectors depend heavily on highly qualified personnel, such as the students who will work on state-of-the-art HDR technologies in our labs,” says Nasiopoulos.

“Our close collaboration with Dolby Canada will give us a distinct competitive advantage and provide industry with a growing pool of scientific talent.”

In addition to the Dolby Professorship, Dolby Canada also recently established a term research Chair in Computer Science in the UBC Faculty of Science.

On October 20th, Dolby representatives joined members of the UBC administration, as well as students, faculty and staff, at a celebratory event to recognize Dolby's generous support of UBC.

“We are grateful for Dolby's recognition and support of UBC's leadership in this eye-opening technology,” said John Hepburn, UBC Vice President, Research.

“The partnership will accelerate the development of HDR for industry and consumers.”

“Dolby aims to provide customers with technologies that improve the overall entertainment experience—whether it's with the highest quality audio or image technology solutions,” said Steve Forshay, Senior Vice President, Research, Dolby Laboratories. “We're eager to see the innovation that results from our support of education and collaboration with the University of British Columbia.”

Dolby is the global leader in technologies that are essential elements in the best entertainment experiences. Founded in 1965 and best known for high-quality audio and surround sound, Dolby innovations enrich enter-

tainment at the movies, at home or on the go.

The UBC Department of Electrical and Computer Engineering is honoured to hold a professorship in

Dolby's name and looks forward to continuing the partnership in the fields of multimedia and entertainment technology.

*From left: Steve Cockcroft, Applied Science Acting Dean; Lorne Whitehead, University Leader of Education Innovation, Professor and 3M Chairholder; John Hepburn, UBC Vice President Research; Steve Forshay, Senior VP Research, Dolby Laboratories; Helge Seetzen, Director, HDR Technology, Dolby Canada; Kevin Stec, Senior Director, Image Technology Research, Dolby Laboratories; Bill Aiello, Professor and Head, Department of Computer Science; Andre Ivanov, Professor and Head, EECE; Simon Peacock, Dean, Faculty of Science.*

*Seated from left: Wolfgang Heidrich, Associate Professor, Department of Computer Science and Dolby Research Chair in Computer Science; Panos Nasiopoulos, Associate Professor, EECE and Dolby Professor in Digital Multimedia.*



*Dolby Professor in Digital Multimedia Panos Nasiopoulos.*