



For more information about wood biomass options as well as the BIMAT update, contact Derek Sidders at (780) 435-7355 or [Derek.Sidders@nrcan.gc.ca](mailto:Derek.Sidders@nrcan.gc.ca) or Brent Joss at (780) 435-7223 or [Brent.Joss@nrcan.gc.ca](mailto:Brent.Joss@nrcan.gc.ca)

## **AI Bio funds new research chair to support forestry bio-initiatives**

*By Tony Kryzanowski*

While Alberta forest companies may see the value of considering the production of bio-products as part of a diversification strategy, examples of doing so on a commercial scale are practically non-existent.

Creation of a new research chair at the University of Alberta, with \$250,000 in financial support from Alberta Innovates Bio Solutions (AI Bio) will provide industry with access to detailed computer modeling that will help companies answer many critical technical and economic questions related to the production of a wide variety of bio-products.

Dr. Amit Kumar, a professor in the Department of Mechanical Engineering at the U of A, has been appointed to the new Natural Sciences and Engineering Research Council of Canada/Cenovus/Alberta Innovates Associate Industrial Chair in Energy and Environmental Systems Engineering.

“Dr. Kumar’s new industrial research program will help private sector industries, investors and government policymakers make informed decisions about long-term energy planning in Alberta’s agriculture and forest sectors,” says Dr. Stan Blade, Chief Executive Officer of AI Bio. “The program’s modeling tools can assess all stages of the supply and demand chain and provide solid information for Alberta’s bio-industries to become more competitive and environmentally sustainable.”

Kumar says he and his colleagues have already done considerable work in the area of establishing the pathways from the forest to the finished product, looking at technical and economic challenges along the way. He added that what the total \$4.4 million contributed by the research chair partners over the next five years will do is help researchers continue the project work they have already started. This includes work for AI Bio and various forest companies, such as data-intensive computer models that assess the cost of production of different types of bio-products, like energy, bio-fuels, ethanol and hydrogen peroxide, taking the feedstock from the forest to the production plant.

“What our models do is give industry a picture and an assessment of the cost of manufacturing these products on a commercial scale,” Kumar says. “We also do a lifecycle assessment for greenhouse gas emissions along the whole manufacturing value chain of a number of pathways of production.” This includes providing unique, side-by-side comparative assessment of the production and greenhouse gas emission potential of various bio-products.

Researchers are also working in the area of forecasting and planning, by developing computer models such as the Long Term Energy Forecasting and Planning (LEAP) model to calculate energy consumption through an energy demand tree. The model assesses scenarios of penetration of technology, including advances in equipment fuel efficiency and its impact on production cost as well as greenhouse gas emissions.

Researchers are also being encouraged to consider all avenues in addressing some of the biggest technical challenges related to the production of bio-products—one being biomass transportation and logistics from the forest to a production facility. For example, they have already done considerable work on the idea of converting solid wood biomass into a



slurry at the source and transporting it to possibly an ethanol production plant by pipeline. So far, they have determined that even if a 36" to 40" pipeline network had to be built to transport the wood biomass slurry, it would still be cheaper to transport the raw material using this method than if it were transported by truck or rail.

One important priority of the Chair's research program is to provide government policymakers with guidance on what potential bio-pathways exist within Alberta's forestry sector, which ones are the best bets in the short, medium and long term, as well as accessing each product's potential for reducing greenhouse gas emissions. Overall, the research program is developed under the guidance of a technical advisory committee, which includes representation from the investment partners.

An overall objective of the research program is to consider various ways that potential bio-products manufactured by the forestry sector can be integrated within the existing hydrocarbon industry, by providing it with bio-products or bio-fuels that could be used by this industry.

Kumar offers an open invitation to any and all forestry companies to become partners in support of the Chair's research program.

Dr. Amit Kumar receives his appointment to a new Research Chair at the University of Alberta, flanked by Alberta Minister of Enterprise and Advanced Education, Thomas Lukaszuk on his left.

For more information about this new research chair and its research program, please contact Dr. Amit Kumar at amit.kumar@ualberta.ca or (780) 492-7797.

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