

Innovative bio-based air filter could transform air filtration, possibly reduce airborne allergens indoors

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A man changes an air filter in a furnace. Andrew Huang, a graduate student in the Purdue University School of Industrial Engineering, has developed a novel soybean filter alternative that removes specific particulates from the air. Credit: Purdue University

The World Health Organization estimates that 90 percent of people breathe polluted air, which causes 7 million premature deaths each year. That's why Ongenia LLC, a Purdue-affiliated startup, is developing a bio-material alternative to standard heating, ventilation and air conditioning (HVAC) units' air filters.

Typical HVAC units control heat and air supply as well as ventilation in indoor spaces to achieve the desired room temperature and humidity. The units also include filters of polyester or fiberglass that remove large particles out of the air. Common air pollutants include dust, smoke and dirt, which can affect both indoor and outdoor air quality.

However, Andrew Huang, a graduate student in the School of Industrial Engineering, has developed a novel bio-based filter alternative that addresses issues of sustainability, health and lower expenses that are desired in the HVAC industry.

"Our filter looks and acts like a typical air filter that fits into HVAC units," Huang said. "However, certain biological properties of our filter allow air to pass through while filtering out specific particulates."

He founded Ongenia LLC to commercialize this technology, which is licensed through the Purdue Research Foundation's Office of Technology Commercialization.

Huang began developing the filter during his participation in the 2017 Student Soybean Product Innovation Competition, which asked students to find and create innovative [soybean](#)-based technology. This air filter alternative, originally based on soybean material, helped Huang and his team, FiltraSoy, win top honors and the People's Choice award at the competition.

Later in 2017, Huang also pitched his business model at the Purdue Ag-accelerator and received \$55,000 in funding to advance his startup. He said he hopes a larger air ventilation company will sublicense this innovative filter from Ongenia.

"We believe our filters can help reduce in-home allergens and improve [indoor air quality](#)," Huang said. "Biological materials can have many brilliant features, including being a renewable resource and possibly having improved fire resistance."

Currently, the startup is allocating funds to begin technical feasibility studies with the bio-based air filter and build a proof-of-concept prototype.

Provided by Purdue University

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