Video: Chemists work up new formulas for greener plastic

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MycoBond is biodegradable packaging material made from mushroom and agricultural waste that was developed by Ecovative Design. Five years ago, engineers Eben Bayer and Gavin McIntyre founded Ecovative based on a revolutionary approach that aims to rid the world of plastics and synthetic foam by substituting mycelium-based products. Fungal mycelium--the root-like filaments that mushrooms spread into soil to gather nutrients as part of nature's recycling system--provide a naturally biodegradable solution, according to Bayer and McIntyre. While they were students at Rensselaer Polytechnic Institute in Troy, N.Y., the two engineers formulated a process for using mycelium to create a material that could be transformed into desirable shapes useful for packaging

and other products. Once the material served its intended use, it could easily compost, seamlessly disappearing back into the environment. Credit: Edward Browka, Ecovative Design

Plastics are a miracle of modern science and are now fundamental to our everyday lives. Of course, they are also a constant reminder of our throwaway society. With support from the National Science Foundation (NSF), chemist Marc Hillmyer of the University of Minnesota and a team at the Center for Sustainable Polymers (CSP) are dedicating their research to transforming the way plastics, or "polymers," are made and unmade.

The Center's vision is to design, demonstrate and develop economically competitive and environmentally friendly polymers that may even outperform their traditional counterparts. To accomplish the goal, these chemists are working on new strategies using renewable feedstock chemicals, such as sugars, plant oils and other naturally sourced starting materials.

The CSP is one of the NSF-funded Centers for Chemical Innovation (CCI), which are focused on major, long-term fundamental chemical research challenges. CCIs are producing transformative research that is leading to innovation and attracting broad scientific and public interest.

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