

Researchers Discover Cheaper Adhesive By Accident

Greg Bolt, Associated Press Writer

CORVALLIS, Ore. (AP) — Researchers at Oregon State University appear to have landed themselves in a sticky business thanks to a discovery made entirely by accident.

The researchers, led by wood science Professor Kaichang Li, recently stumbled on a new form of adhesive that they say is just as good as those currently used in various tapes, stick-on notes and stamps. But Li said the new goo costs about half as much to make and uses none of the petroleum-based solvents and chemicals now used in adhesive manufacturing.

"It's very environmentally friendly," said Li. "We don't use any volatile organic compounds in this process." The university is seeking a patent on the formula and already is talking with private companies interested in manufacturing and selling the adhesive. If the product catches on, it could become a player in the pressure-sensitive adhesive market, which analysts estimate is a \$26 billion global industry.

Li said the new material is derived from a substance known more for slipperiness rather than stickiness: vegetable oil. He declined to go into detail on the formula while the patent application is pending, but he said it's a very simple recipe that at high heat turns the oil into a glue. And a glue is just what Li and a postdoctoral research associate were looking for when they started messing with oil-based formulas. But they were trying to develop something much different, an environmentally friendly adhesive that would be solid at room temperature but melt at high temperatures and be suitable for such things as making cardboard boxes or furniture.

No luck there, but as they were testing different chemical recipes, Li spotted something.

"I noticed that at a certain stage of the reaction, the material became really sticky at room temperature," he said. "I said, Hey, hold on. We can use this for other applications."

By varying the formula, Li said the strength of the adhesive can vary from lightly sticky to highly sticky. That gives it potential for use in everything from postage stamps and stick-on notes to duct tape.

Others have tried to make adhesives from vegetable oil, but none could do it without falling back on the same kind of petrochemicals now in use. That's where Li and his team succeeded.

Researchers Discover Cheaper Adhesive By Accident

Published on Industrial Maintenance & Plant Operation (<http://www.impomag.com>)

Li said the new formula uses renewable substances entirely. The main component, vegetable oil, could come from corn, soy or canola or other sources.

But it's not only green; it's also cheap. Li said the vegetable-based product should cost about half as much to make as petroleum-based adhesives. Li said he's already met with representatives of companies from California and Pennsylvania interested in licensing the formula. "They said it was really worth their trip," Li said. Li is considered an expert in wood chemistry, composites and adhesives. He's already come up with major innovations in the field, including a non-toxic, formaldehyde-free adhesive for use in plywood and particleboard that was inspired by looking at how surf-pounded mussels cling to rocks.

Source URL (retrieved on 01/31/2015 - 4:24am):

<http://www.impomag.com/news/2010/07/researchers-discover-cheaper-adhesive-accident>