

Information superhighway's trash yields a super highway asphalt

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Discarded electronic hardware, including bits and pieces that built the information superhighway, can be recycled into an additive that makes super-strong asphalt paving material for real highways, researchers in China are reporting in a new study. It is scheduled for the Feb. 1 issue of *ACS' Environmental Science & Technology*.

They describe development of a new recycling process that can convert discarded electronic circuit boards into an asphalt “modifier.” The material makes high-performance paving material asphalt that is cheaper, longer lasting, and more environmentally friendly than conventional asphalt, the scientists report.

In the new study, Zhenming Xu and colleagues note that millions of tons of electronic waste (e-waste) pile up each year. The printed circuit boards used in personal computers, cell phones, and other electronic gear, contain toxic metals such as lead and mercury and pose a difficult disposal problem. The boards also are difficult to recycle. Xu's group, however, realized that the boards, which provide mechanical support and connections for transistors and other electronic components, contain glass fibers and plastic resins that could strengthen asphalt paving.

The scientists describe a new recycling method that quickly separates toxic metals from circuit boards, yielding a fine, metal-free powder. When mixed into asphalt in laboratory tests, the powder produced a stronger paving material less apt to soften at high temperatures, the researchers say.

More information: *Environmental Science & Technology*, Asphalt Modified with Nonmetals Separated from Pulverized Waste Printed Circuit Boards

Provided by ACS

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