'Super paper:' New nanopaper more break-resistant than cast iron

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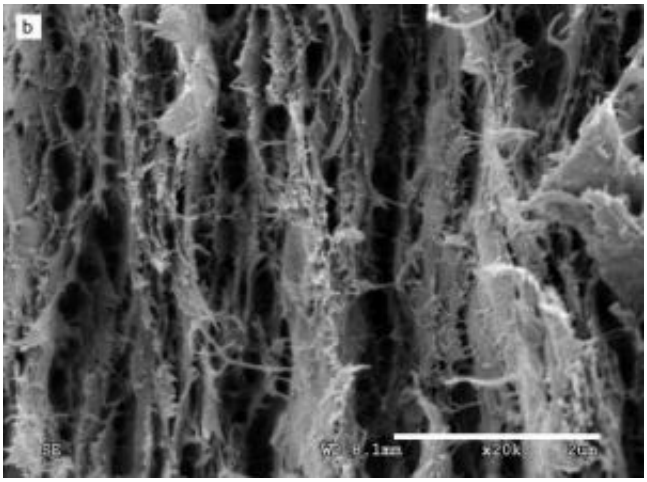

Scientists report development of cellulose nanopaper, a superstrong material that could be used in the construction industry. Above is a cross-section of a fracture surface of a cellulose nanofibril film. Credit: Courtesy of American Chemical Society

Researchers in Sweden and Japan report development of a new type of paper that resists breaking when pulled almost as well as cast iron. The new material, called "cellulose nanopaper," is made of sub-microscopic particles of cellulose and may open the way for expanded use of paper as a construction material and in other applications, they suggest. Their study is scheduled for the June 9 issue of ACS' *Biomacromolecules*.

In the new study, Lars A. Berglund and colleagues note that cellulose —

a tough, widely available substance obtained from plants — has potential as a strong, lightweight ingredient in composites and other materials in a wide range of products.

Although cellulose-based composites have high strength, existing materials are brittle and snap easily when pulled.

The study described a solution to this problem. It involves exposing wood pulp to certain chemicals to produce cellulose nanopaper. Their study found that its tensile strength — a material's ability to resist pull before snapping — exceeded that of cast iron.

They also were able to adjust the paper's strength by changing its internal structure.

Source: ACS