New Toner Technology Improves Paper Recycling Rates

The Forest Products Laboratory has improved the recycling rates of office paper with their enzymatic deinking process. Now researchers are using this technology to create a recyclable toner that will further increase recycling success.

The Problem

Office wastepaper is a large part of the recycled fiber industry. It presents a special problem, however, since the toner used to print on this paper differs from that of conventional printing inks. The toners from machines such as laser printers contain adhesives that are fused to the surface of the paper and intermingle with the fibers. These adhesives make the toner difficult to remove during recycling, so the resulting paper is often made into lower grade paper products.

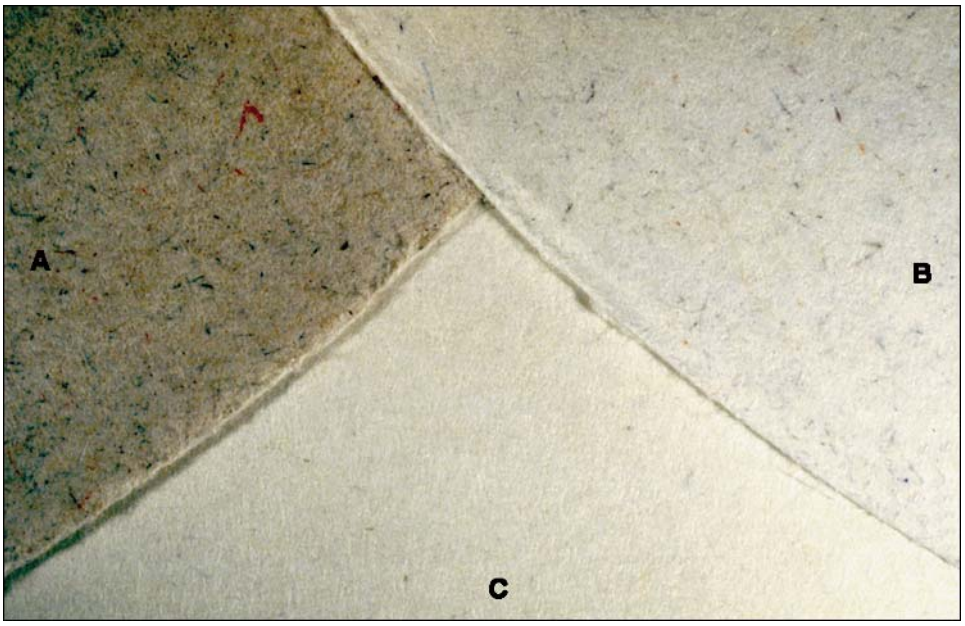
The Solution

Enzymatic deinking is a technology that FPL researchers developed to address the toner problem. The process involves using enzymes to remove the toner from office wastepaper during recycling. By adding environmentally benign enzymes, scientists were better able to remove the inks from the office wastepaper without compromising the strength or brightness of the resulting paper. This technology was successfully transferred to industry use, and the enzymes are now commercially available at a cost comparable to that of conventional deinking chemicals.

FPL scientists are now advancing this concept and taking the technology a step further. Developing a toner with the enzymes already contained within it will simplify the office waste recycling process.

The Benefits

With the use of this recyclable toner, there will be no need to treat entire batches of office waste with the enzymes during the recycling process. By directly incorporating these enzymes into the toner, the recycling process will be made simpler and more economic.



Recycled office wastepaper: (A) without deinking treatment; (B) using conventional methods of deinking; (C) using enzymatic deinking.