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[The Ultimate in Windscreen and Under-Floor Heating: Carbon Nanotubes](#)

Exploiting the current conductivity of the nanotubes

Nanotechnology is invading your windscreen. A new heater to clear car windscreens could be a transparent lacquer using carbon nanotubes. The researchers say that thicker, opaque versions of the coating could be used for the heating of building floors, turning them in radiators. The lacquer - which can be sprayed onto any surface - is a mixture of liquid base and electricity conducting nanotubes. When the liquid dries, the nanotubes form a conducting network inside the lacquer. Passing a light current through this nanotubes network heats up the layer. In lab tests, a layer connected to a 12 volt power supply - like in a car battery - was able to avert ice from a plastic sheet in roughly 2 minutes, even if the test sheet was only the size of a paper back book. "We can heat up the whole of any surface with a transparent coating," said researcher Dominik Nemeč. "It could be used to clear windscreens or mirrors of water or ice." The new nanotubes coating technique is the creation of Nemeč and colleague Ivica Kolaric, both from the Fraunhofer Technology Development Group in Stuttgart, Germany. They think the new technology is better than the built-in wire filament heaters in car windscreens. "As well providing more uniform heat than a filament heater, the nanotube film is more resistant to damage," says Nemeč. "If a filament is broken the whole heater won't work," he explains, "this new film can have gaps in - by accident or design - and still work. When nanotubes' percentage increases in the lacquer, the heating properties increase but the material also turns opaque. "Anywhere you need heat, you could coat a surface in this material," says Nemeč. The new material presents great perspective for under-floor heating. A square meter of film of about 0.3 millimeters thick releases about 15 kilowatts of heat, which is quite enough for a big room.