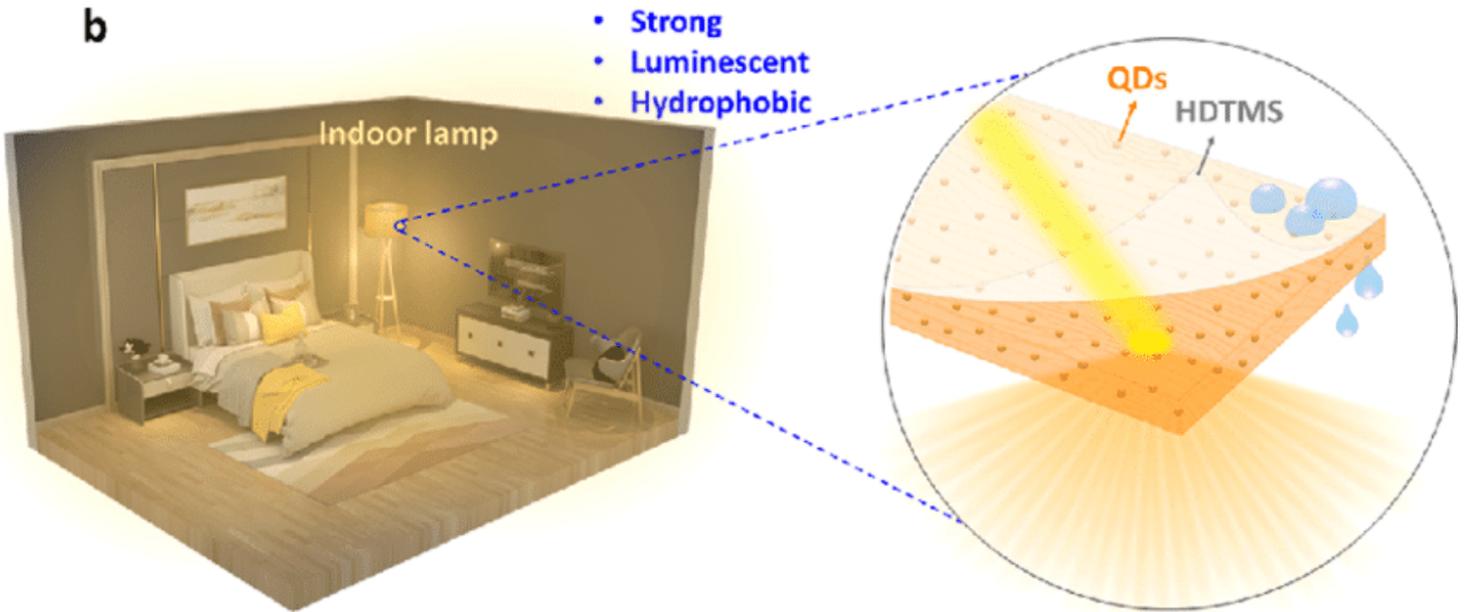


Functional wood Film

- Strong
- Luminescent
- Hydrophobic



Schematic illustration of the manufacturing process for the luminescent wood film. (a) The preparation of the materials. (b) Possible applications for interior illumination | Photo source [ACS Nano](#)

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RESEARCHERS ALTER WOOD TO MAKE IT EMIT LIGHT



A new wood product can emit luminescent light, with the potential to create cheaper lighting

Spotted: Researchers have already demonstrated ways to bleach wood to turn it transparent and to allow it to store and release heat. Now, a team of researchers at Switzerland’s ETH Zurich and New Zealand’s Scion research organisation have developed a way to turn wood into a water-resistant film that gives off light.

The researchers treated balsa wood with a solution which removes lignin, a component of plant cell walls which is key to their rigidity, along with around half of the hemicellulose, a polymer that helps plants maintain their structure. The treatment left behind a porous scaffold. The team then infused this with a solution containing quantum dots—semiconductor nanoparticles that glow when struck by ultraviolet (UV) light.

The resulting material was compressed, dried and covered in a waterproof coating. The end result was a water-resistant wood film that glowed with a uniform, warm orange light when subjected to UV rays. The researchers demonstrated possible uses for the film by using it to light up the interior of a dollhouse. They also pointed out that the quantum dots can be used to produce light of different colours, increasing the film’s versatility.

The research was reported in *ACS Nano*, where the researchers **note**: “Most materials used for optical lighting applications need to produce a uniform illumination and require high mechanical and hydrophobic properties. However, they are rarely eco-friendly.” The bio-based lights, however, have the potential to reduce the use of electricity in some forms of lighting.

The consumer demand for more sustainable forms of energy has led to a host of innovations in lighting and energy generation. At Springwise, we are very excited about these developments, which have recently included a battery powered by [soil](#) and [smart street lights](#) that allow a huge reduction in energy usage.

Written By: Lisa Magloff

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Takeaway:

Other researchers have also investigated the use of wood-based thin films for optical applications. However, most of the materials developed so far have drawbacks, such as poor mechanical properties, uneven lighting, or a requirement for a petroleum-based polymer matrix. This new film, in contrast, has what researchers describe as “strong mechanical properties”, meaning it is sturdy enough for use in applications such as, “interior designs (e.g. lamps and laminated cover panels), photonics and laser devices.”