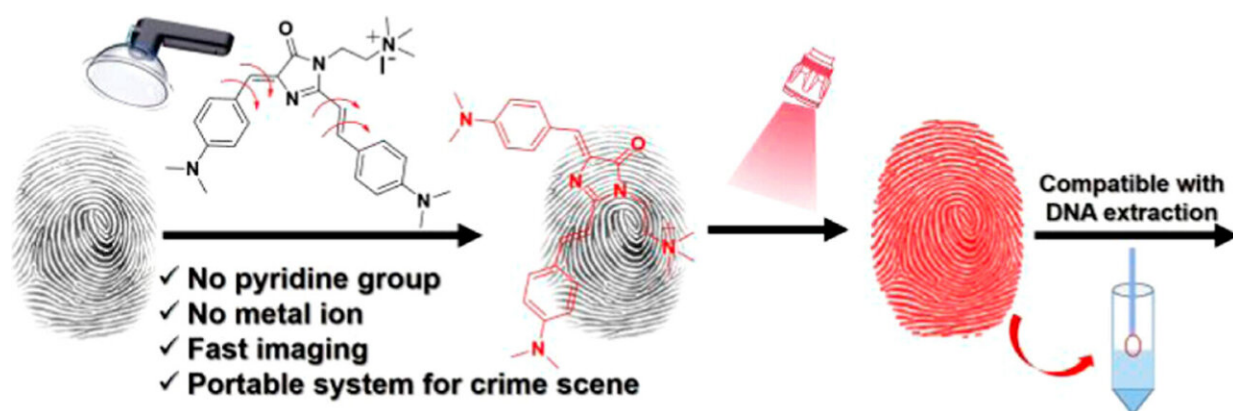


Scientists develop biocompatible fluorescent spray that detects fingerprints in ten seconds

February 26 2024



Graphical abstract. Credit: *Journal of the American Chemical Society* (2024).
 DOI: 10.1021/jacs.3c11277

Scientists have developed a water-soluble, non-toxic fluorescent spray that makes fingerprints visible in just a few seconds, making forensic investigations safer, easier and quicker.

Latent fingerprints (LFPs) are invisible prints formed by sweat or oil left on an object after it's been touched.

Traditional forensic methods for detecting fingerprints either use toxic powders that can harm DNA evidence, or environmentally damaging petrochemical solvents.

The new dye [spray](#), developed by scientists at the Shanghai Normal University (China) and the University of Bath (UK), is water soluble, exhibits low toxicity and enables rapid visualization of fingerprints at the crime scene.

They have created two different colored dyes—called LFP-Yellow and LFP-Red—which bind selectively with the negatively-charged molecules found in fingerprints, locking the [dye molecules](#) in place and emitting a fluorescent glow that can be seen under blue light.

The dyes are based on a fluorescent protein found in jellyfish called Green Fluorescent Protein (GFP), which is used extensively by research scientists to visualize biological processes. This means the dyes are biologically compatible and don't interfere with subsequent DNA analysis of the fingerprints.

The fine spray prevents splashes that could damage prints, is less messy than a powder, and works quickly even on [rough surfaces](#) where it is harder to capture fingerprints, such as brick.

Professor Tony James, from the Department of Chemistry at the University of Bath (UK), said, "This system is safer, more sustainable and works faster than existing technologies and can even be used on fingerprints that are a week old.

"Having two different colors available means the spray can be used on different colored surfaces. We're hoping to produce more colors in the future."

Dr. Luling Wu, also from the University of Bath (UK), said, "The probes are only weakly fluorescent in [aqueous solution](#), but emit strong fluorescence once they bind to the fingerprints through the interaction between the probes and [fatty acids](#) or amino acids."

The principal investigator, Professor Chusen Huang from Shanghai Normal University in China, said, "We hope this technology can really improve the detection of evidence at crime scenes."

"We are now collaborating with some companies to make our dyes available for sale. Further work is still ongoing."

Their study is published in the [*Journal of the American Chemical Society*](#).

More information: Nanan Ruan et al, De Novo Green Fluorescent Protein Chromophore-Based Probes for Capturing Latent Fingerprints Using a Portable System, *Journal of the American Chemical Society* (2024). [DOI: 10.1021/jacs.3c11277](https://doi.org/10.1021/jacs.3c11277)

Provided by University of Bath

Citation: Scientists develop biocompatible fluorescent spray that detects fingerprints in ten seconds (2024, February 26) retrieved 29 April 2024 from <https://phys.org/news/2024-02-scientists-biocompatible-fluorescent-spray-fingerprints.html>

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