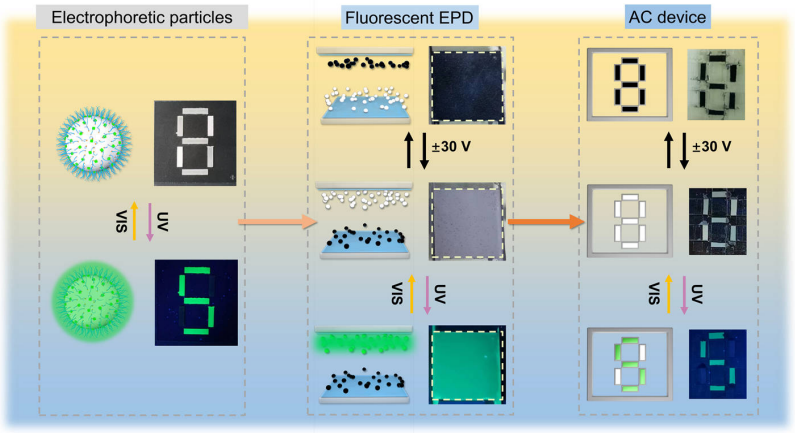
The dynamic anti-counterfeiting application based on fluorescent electrophoretic display

GA, UNITED STATES, September 7, 2024 /EINPresswire.com/ -- Traditional optical anti-counterfeiting (AC) is achieved by static printed images, which makes them susceptible to lower levels of security and easier replication. Here in, we fabricated a multifunctional anti-counterfeiting (AC) device based on fluorescent electrophoretic particles, which can achieve dynamic AC display by switching the electric field and UV light. This work demonstrated that fluorescent electrophoretic display (EPD) has a fast response, dynamically switch image and bright luminescence, providing potential in multifunctional AC applications.



Working principle of the fluorescent EPD and dynamic AC device.

Anticounterfeiting (AC) technologies can effectively prevent counterfeit products and fakes. Presently, AC technologies can be widely applied in the product labels, passports, and confidential documents. However, single function AC technologies lack security and can be easily duplicated. Thus, it is essential to develop the AC device with dynamic display and multi-function.

In a recent paper (https://doi.org/10.1038/s41377-024-01526-x) published in Light Science & Applications, a team led by Professor Bo-Ru Yang from the State Key Laboratory of Opto-electronic Materials and Technology, Guangdong Province Key Laboratory of Display Materials and Technologies, School of Electronics and Information Technology, Sun Yat-Sen University, Guangzhou, China, and co-workers have prepared a fluorescent electrophoretic display (EPD) based on fluorescent electrophoretic particles TiO/CPB-3. This display achieves the image switching between black, white, and green fluorescence states under dual-mode driving (electronic field and UV light). Based on the fluorescent EPD, the team fabricated the dynamic AC devices, which exhibits the multifunctional AC. The fluorescent EPD has a fast response time, a high contrast ratio, and bright green fluorescence. This prototype demonstrates a new way for future dynamic AC and identification.

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