

- 1 Uncoated surface without fingerprint.
- 2 Uncoated surface with fingerprint.
- 3 Coated surface without fingerprint.

ANTI-FINGERPRINT COATING MAKES FINGERPRINTS INVISIBLE

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Anti-Fingerprint (AFP)

The Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM has developed a novel anti-fingerprint nano-coating. The anti-fingerprint effect means that fingerprints on the surface cannot be seen at all by the naked eye, or only very slightly. Although the fingerprint is actually on the surface, it is essentially “invisible”.

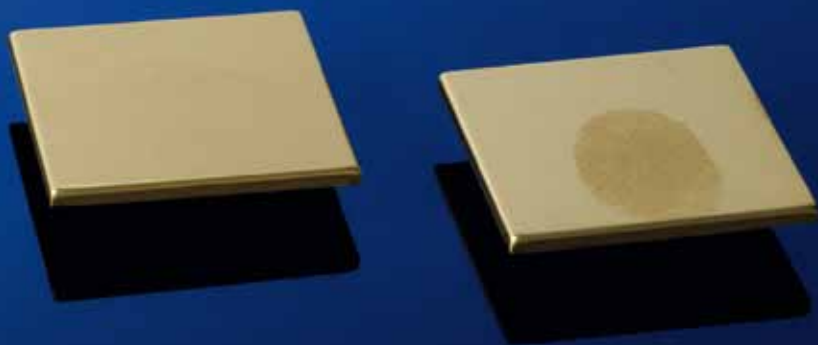
Principle

The AFP effect is realized by applying a nano-coating to reduce the optical contrast of fingerprints. The optical properties of fingerprints are statistically imitated by a non closed, inhomogenous coating (Fig. 1 – 3). The coating has a thickness between 170 and 210 nm. Under the microscope the coating appears as an island like coating

with a blue color impression. It is, however, a highly transparent layer, meaning that the appearance of the surface is essentially unchanged. The coating and the fingerprint are hence no longer visible to the eye.

Coating process

This is a two step process. Firstly a liquid precursor is applied as a thin film. This is then crosslinked by **vacuum ultraviolet radiation** (VUV radiation). Technology developed at Fraunhofer IFAM such as **Light^{PLAS} technology** or the **plasma hybrid coating** can be used here.



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Potential applications

There are numerous potential applications for this coating. An AFP coating is in principle useful everywhere where fingerprints impair the appearance of a surface. Potential applications include interior components in cars, household objects such as casings, blinds, decorative frames, handles, sanitary fittings such as sink plugs, taps, and mixers, general office equipment – e. g. writing utensils – , and in particular decorative consumer goods. The technique can be used on virtually all materials. Particularly suitable are metal and metalized surfaces with low roughness. Ideal is an average surface roughness r_a in the 0.3 to 1.0 μm range.

Portfolio offered by Fraunhofer IFAM

We assess customers' requirements and prepare coated specimens for evaluation. Based on the results, optimization and technology transfer are carried out. On request, Fraunhofer IFAM can plan and design a coating plant tailored to customer needs.

4 *The coating is the key: The nano-coating reduces the visibility of the fingerprints on rough, mat surfaces of plastic and metal materials.*