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Press release

Fraunhofer-Institut für Fertigungstechnik und Angewandte Materialforschung IFAM
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Research results, Transfer of Science or Research
Chemistry, Economics / business administration, Environment / ecology, Materials sciences, Social studies
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# Environmentally friendly non-stick coating replaces per- and polyfluorinated chemicals (PFAS) on everyday products

**Fluorine-free into the future Whether it is pans, cutlery or packaging, per- and polyfluorinated chemicals (PFAS) have been used for coating in a wide variety of everyday products and processes for many years. Due to known risks of these substances to humans and the environment, at least a partial ban on the production and use of PFAS is expected to be implemented soon. The use of comparable alternatives is therefore essential for numerous companies. Fraunhofer IFAM specializes in fluorine-free coatings and has developed the PLASLON® technology, a PFAS-free non-stick coating that meets the required property profile and can replace the existing technology with immediate effect.**

PFAS are a group of several thousand individual chemicals. They do not originally occur in nature, are extremely stable and are therefore constantly accumulating in the environment. The fluorine compounds, also known as "eternity chemicals", can occur in the blood serum of humans and lead to negative health effects [1]. For this reason, the European Chemicals Agency (ECHA) is considering a ban on the production, use and marketing of PFAS. A decision by the European Commission on this is expected in 2025, according to the German Federal Environment Agency.

Companies that use PFAS will face challenges because of a ban. In order to maintain processes and production, alternative solutions have to be found. Plasma technology offers ideal conditions for this. The plasma coatings developed at Fraunhofer IFAM are not only fluorine-free (Zero-F), but also free of additives. They can be applied on almost all materials. Due to their property profile, some of the coatings are particularly suitable as PFAS-free non-stick coatings, sliding coatings, and hydrophobic finishes.

PLASLON® - PFAS-free non-stick coating

With the PLASLON® coating, researchers at Fraunhofer IFAM have developed a PFAS-free alternative characterized by excellent non-stick properties combined with high mechanical resistance. The coating, which is produced by means of plasma technology, is designed as a gradient layer to enable excellent adhesion to the product body on the one hand and to display optimum non-stick properties on the other. The coating is also characterized by easy-to-clean properties and is resistant to cutting and abrasion. It is non-porous and food safe. It also exhibits oleophilic behavior regarding edible oils and fats.

A unique selling point of the PLASLON® coating is that - unlike other non-stick coatings - it is also suitable for enamel, glass, stoneware, and porcelain due to its good adhesion and outstanding hardness. Products made of these materials in particular are very scratch-resistant but have poor non-stick properties.

The institute's scientists also have the necessary know-how of suitable manufacturing processes to be able to finish products economically and in large quantities. Depending on the customer's needs, various concepts are available for this, such as XXL systems or throughput systems. Combined with low energy consumption during the production,

uninhibited heat transfer during use and a long service life of the coating, PLASLON® is particularly sustainable and thus trendsetting.

[1] Source Federal Environment Agency

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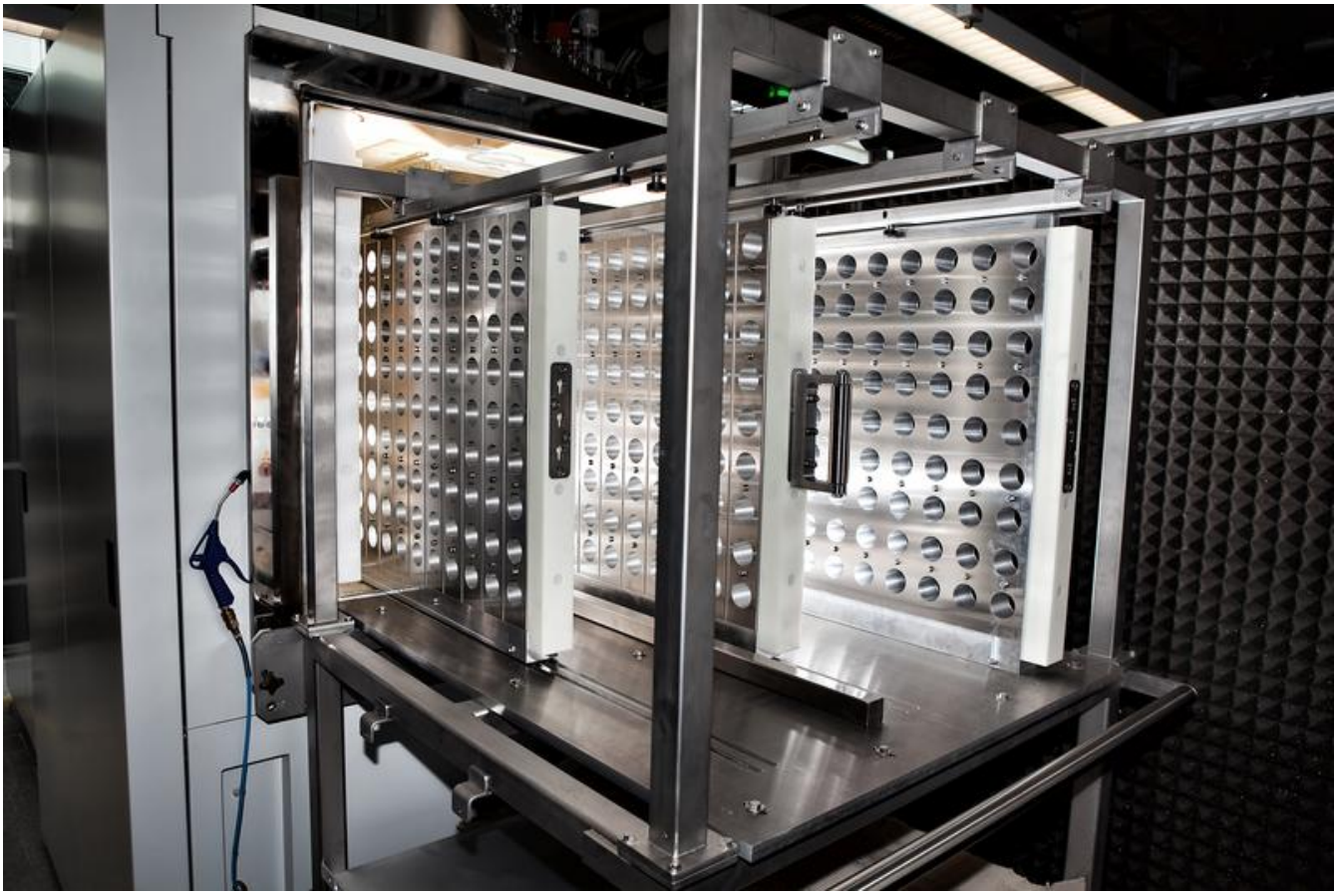
Pan samples coated with fluorine-free PLASLON® technology.



Low-pressure plasma system with easily exchangeable electrode systems, which also function as product carriers.