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- 1 Magnetron PECVD with heated substrate
- 2 nanoFlex front view with gas flow control

## nanoFlex

### LABORATORY PILOT PLANT

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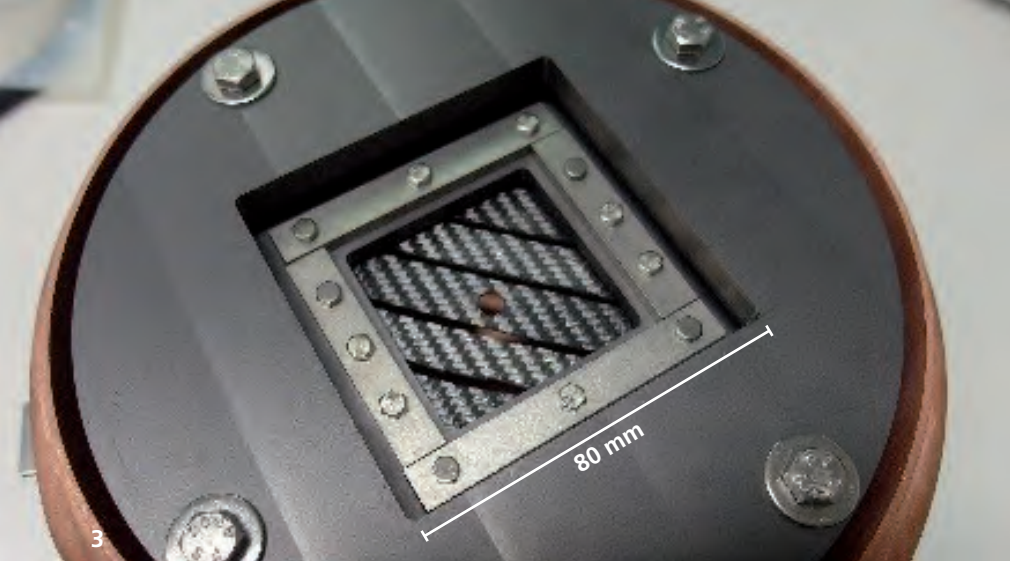
The surface modification and coating provides polymer films, other flexible and rigid substrates particularly valuable properties. Such refinement enables the materials to be used for a wide range of innovative products.

The Fraunhofer FEP possesses a large number of pilot-scale facilities that allow processes to be scaled up. However, feasibility studies and technology development on a small scale are carried out in advance on our pilot plants first.

The special feature of the nanoFlex experimental plant is the possibility to combine important vacuum process

technologies on a small scale. Thus the system is equipped with a dual magnetron system, shielding facilities for target materials and a graphite heater. With this system, metals and dielectrics can be sputtered onto substrates or (plasma-activated) chemical vapor depositions of e. g. graphene can be performed at temperatures up to 950°C. Suitable substrate materials are glass as well as silicon wafers, plastic or metal foils, metal sheets and ceramic plates.

This allows the compatibility of new coatings on different substrates to be tested in the plant, as well as the quality of new sputtering targets or other process components, for example by means of plasma diagnostics.



## Technical data

Base vacuum	$10^{-4}$ Pa
Substrate heating	20 ... 950°C
Substrate size	up to 60 × 60 mm <sup>2</sup>
Coating modules	<ul style="list-style-type: none"> <li>▪ Dual magnetron system with round target Ø 90 mm</li> <li>▪ Ion source</li> <li>▪ Microwave source</li> </ul>
In-situ characterization	Plasma emission spectroscopy

## Technologies

### Pulse Magnetron Sputtering

- Dual magnetron system
- Power supply for pulsed DC
- Metallic and reactive process control

### Magnetron PEVCD

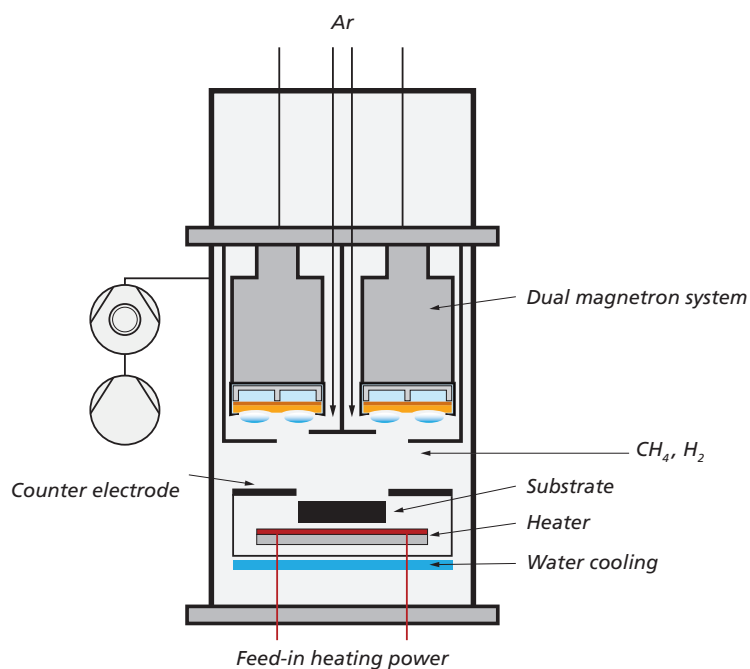
- Monomer inlet for gases
- Dual magnetron system as plasma source
- Heater as CVD source

## Plasma treatment of surfaces

## Our offer

- Feasibility studies
- Process development
- Test of coating sources and materials

### 3 Substrate carrier with substrate heating and anode



We focus on quality  
and the ISO 9001.