Cold plasma spraying: a technology with potential

Microparticles and nanoparticles form the basis of many innovative applications and technologies, including what is known as cold plasma spraying, due to their large specific surface. What makes the innovative process developed at the Fraunhofer IST special is that a broad range of different materials can be treated and a variety of layer functions can be realized at the same time.

With cold plasma spraying, the microparticles that are usually smaller than 20 µm are melted with the help of plasma in a plasma jet and sprayed onto the substrate being functionalized. Using especially small particles allows melting to be carried out at comparatively low temperatures. This makes it possible to coat materials that are sensitive to temperature, such as paper. Three-dimensional, flat, and also textured objects can be coated using this process.

In addition, the versatile applications of the coating materials, the range of possible layer functions is very broad as well. Cold plasma spraying can for example be used to apply PCB tracks made of high-melting metal, or anti-static tracks to thermally sensitive fibers, textiles, and plastics, or to apply antiadhesive or antimicrobial functional layers to substrates. The Fraunhofer IST is presenting several application examples and products at the Hanover trade fair (hall 2, booth C16/C22). In addition to door handles with an antimicrobial coating and copper PCB tracks on plastic and glass, heat dissipating layers on polymer components are for instance also being presented. These can be used for example in the engine compartment of an automobile.

Coating deposition by cold plasma spraying at the Fraunhofer IST.
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