

PRESS RELEASE

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Fraunhofer IWS is going to present novel coating solutions at the tradeshow EMO Hannover 2017

(Hannover/Dresden, September 19, 2017) The Fraunhofer IWS introduces two new coating solutions at the EMO Hannover 2017. The Dresden scientists present the diamond-like carbon coating "Diamor®" and a new concept for the fabrication of hard wear-protecting coatings with a thickness of more than 100 micrometers.

As in the past years, Fraunhofer IWS is again taking part in the leading tradeshow for metal working EMO 2017. At their booth the IWS engineers inform about two possibilities for tool surface finishing tasks. One possibility is a coating process with the diamond-like carbon (ta-C) "Diamor®". Thanks to its friction-reducing effect the "Diamor®"-coating is outstandingly suited for many lubricated as well as non-lubricated applications. The particular adhesion strength of the up to 15 micrometers thick films enables coating processes of most diversified components and tools. The IWS scientists apply the particularly developed Laser-Arc technology and use a plasma filter to produce smooth and homogeneous films. "Diamor®"-coatings achieve hardnesses of up to 80 Gigapascal (a value, which corresponds to nearly 80 per cent of diamond hardness as hardest known material). As a result the resistance against wear increases for example in the case of cutting tools, at the same time the friction between the materials to-be-cut decreases. The hard and smooth carbon surface reduces the adhesion of the counterpart and is thus highly suitable for aluminum machining. Due to the property combination of abrasion resistance, low friction and degree of adhesion, ta-C coatings are a very promising technology in particular for machining processes of composite materials.

Thick coatings for high loads

Furthermore the Dresden scientists are going to inform about a new approach for the fabrication of thick PVD coatings. For the past two decades thicknesses of three to five micrometers have been regarded as upper limit for many applications in cutting, forming and polymer technologies. IWS scientists, however, have now succeeded in fabricating hard wear-protecting coatings with thicknesses of up to 100 micrometers and more. The solution is a nano layer design which shows a homogeneous property distribution comprising the complete film thickness. The novel film type offers a

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substantially improved protection compared to conventional thin films. In particular for tool production industries, the IWS approach offers most promising prospects since thicker coating surfaces are able to withstand higher loads. In addition the IWS solution opens up new ways for post treatments such as structuring, polishing or sharpening of cut edges.

Come and visit us at the EMO Hannover at hall 4, booth F02 from September 18 to 23, 2017. In addition to the coating processes mentioned above, Fraunhofer IWS will also be presenting laser beam hardening and laser roll plating.

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The **Fraunhofer Institute for Material and Beam Technology** embodies innovations in the area of laser and surface technology. According to customers' requests, we offer solutions for joining, cutting, ablation processes, surface treatment, and laser coatings as well as for CVD and PVD procedures. Research and development work is based on comprehensive materials and nanotechnology know-how. Systems engineering and process simulations complete the substantial competencies in the fields of laser materials processing and plasma coating procedures. We offer one-stop solutions, starting with the research and development of new technologies, transferring them into industrial applications and, finally supporting the customers on-site.