

Overview —

Coating

Technology

Division



Fraunhofer USA

Center for Coatings and Laser Applications

Mission Statement

Through our combined industry and university expertise, we provide our customers with innovative technology solutions and unique R&D services in the fields of coating and laser applications.



Who We Are

The Fraunhofer USA Center for Coatings and Laser Applications*, in partnership with Michigan State University (MSU), provides innovative R&D services based on its outstanding expertise in coating and laser technology. We are a non-profit organization providing research services to our customers who include federal and state governments, multinational corporations, and small to medium-size

CVD Diamond coatings and synthesis is a speciality of the Coating Technology Division



companies. The overall aim of the entire Fraunhofer organization is to bridge the gap between research and industry by providing top notch applied research services to our customers, helping to enhance their competitive edge!

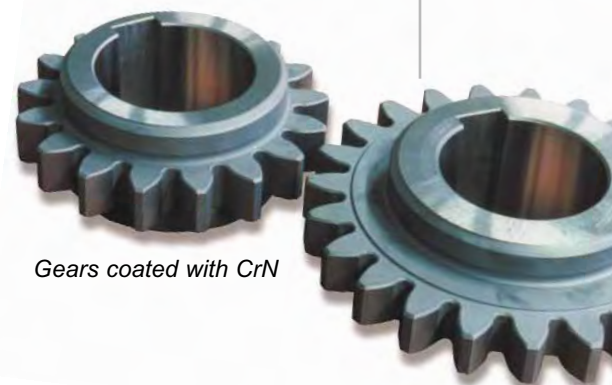
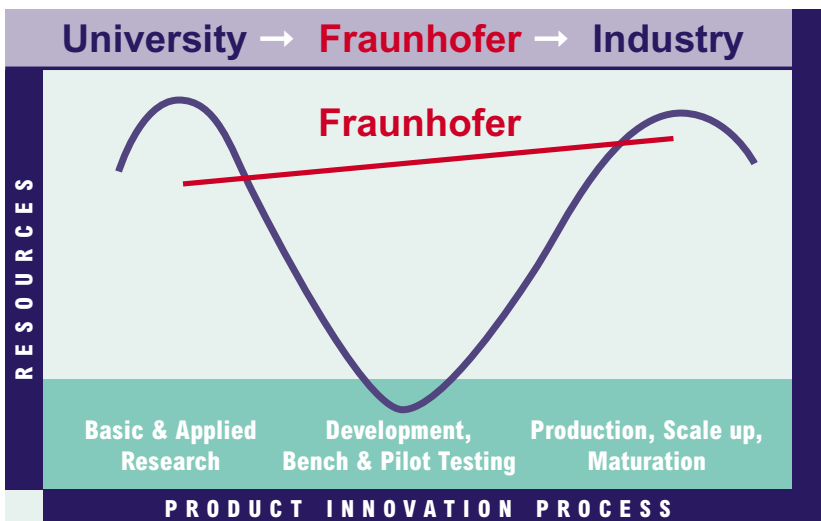
The Fraunhofer USA Center for Coatings and Laser Applications comprises two divisions. **The Coating Technology Division** (based on the MSU campus in East Lansing, Michigan) specializes in

plasma-assisted technologies such as PVD, CVD diamond coating and synthesis, microwave materials processing and microwave plasma and machine development.

Our experience with ceramic coating technologies advances development in wear resistant and decorative coatings.

Our capability in carbon-based materials synthesis and film deposition technologies includes diamond and diamond-like carbon synthesis and ranges from carbon nanotubes to freestanding diamond windows. A major focus area is the fabrication of microelectromechanical systems (MEMS) devices and micro components for applications such as sensors.

Bridging the gap between research and industry



Gears coated with CrN

Making innovation a reality



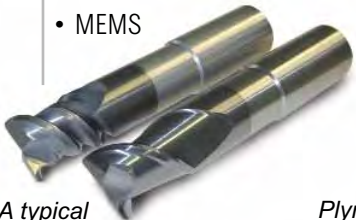
PVD section of the Coating Laboratory

This broad spectrum of expertise enables us to provide coating and materials processing technology solutions for a wide variety of markets and applications including:

- Cutting tools
- Wear and optical components
- Decorative applications
- Electronics- Semiconductors and Data Storage
- Fuel cells
- Automotive
- Aerospace
- Packaging
- Biomedical
- MEMS

Coating Technology Equipment

- 3 fully automated industrial PVD systems
- IWS Laser-Arc System
- 6x 2.45 GHz CVD systems (diamond + etching)
- 1x 915 MHz CVD system
- Non-destructive thin film tester LAwave
- Raman, SEM, AFM, electrical probing
- Electro-optical characterization
- Clean room facility 4" wafer processing (e-beam, rf+dc sputtering, PECVD, ECR etcher, masking, ellipsometer)



A typical application — coated tools

Plymouth, MI



East Lansing, MI



The Laser Applications Division is based in Plymouth, Michigan and carries out research and prototype applications development in the field of laser materials processing. The division has a wide range of expertise in laser processing technology including advanced laser and hybrid laser welding technology, cutting, cladding and surface treatment. It is continually active in providing state-of-the-art laser technology solutions for a wide range of industrial fields, including automotive, aerospace, ship building, defense, and oil and gas exploration industries.

So what makes us different?

The combination of customer-driven R&D activities supported by University faculty and facilities enhances our ability to provide innovative and unique technology solutions to benefit our customers.

The partnership with MSU has enriched our resources in terms of expertise, with professors, graduate and post doctorate students supporting CCL engineers on research projects. And in terms of capability, we have access to even more high-tech equipment and laboratory facilities which further improves the range of services offered to our customers.

Due to our applications-focus and extensive resource base, we are able to offer our customers a complete range of fully integrated services related to our core competences such as sophisticated characterization analysis and testing to prototype component production, consulting services and complete system development.

For more information on this or any other of Fraunhofer CCL products or services please contact cclinfo@fraunhofer.org

**Fraunhofer USA is made up of 6 centers and each center is affiliated with at least one of the 57 Fraunhofer Institutes in Germany. The Center for Coatings and Laser Applications (CCL) benefits from an association with the Institute for Material and Beam Technology (IWS) in Dresden, Germany, and can call upon their resources and expertise if required.*



IWS Institute, Dresden, Germany