Coating Solutions

SCHOTT Research

Since SCHOTT’s founding, 125 years ago, research and development have been top priorities. Currently, some 200 employees work at the “Otto-SCHOTT Forschungszentrum” (Otto SCHOTT Research Center), Europe’s most advanced research center for special glass. The research & development group is a service division for the SCHOTT Group’s 40 production facilities worldwide, and it concentrates its activities on application-oriented problems.

R & D Services - Coating Solutions

Coatings are an essential and integral component of many high-tech products. They are often crucial for the level of functional performance, quality, reliability, and appearance, and – last but not least – the total system cost. Innovations are frequently enabled by advances in coating. High-performance coatings from SCHOTT are valued for providing a source of competitive advantage to our customers. You can benefit from the knowledge and experience of SCHOTT’s scientists, engineers and technicians with access to unique state-of-the-art tools. We will be happy to provide solutions to your request. Our services range from customer-specific coating developments to contract manufacturing of lab-scale or pilot-scale quantities. We design and fabricate a multitude of coating functionalities and provide consultancy, as well as technical studies in the fields of our expertise.

Main contact

Technology and Product Development Coatings
Dr. Tobias Kälber
Phone +49 (0) 6131/66-7271
E-Mail tobias.kaelber@schott.com
# Our Services

## Contract Coating Development

- Development of functional coatings according to your specifications

## Contract Manufacturing of Small Volumes

- Sampling
- Small-scale production

## Coating System Engineering

- Design and building of coating machines

## Coating Characterization and Testing

- Functionality and reliability tests
- Composition and Microstructure

## Consulting

- On coating questions relevant to your business: coating development and application support, specifications, equipment supplier, technical and market research, …
Our Coating Expertise

Over 30 Years of Coating Experience

- Coverage of entire product development process:
  - Process and product development
  - Design and set up of lab and pilot production coaters
  - Transfer to production

- Flat and curved substrates, including uniform inside coating of hollow bodies

- Coatings on glass, glass ceramics and plastic substrates

- Various functionalities, including decorative coatings

- Alignment of specifications and application tests with customers

- State-of-the-art characterization and testing

- Design of optical coatings
Contract Coating Development

Our long-time experience with a broad spectrum of coating techniques, coating functionalities and product requirements makes sure that our customers obtain the optimal coating for their desired application.

Development of Functional Coatings According to Your Specifications

- Optical filters: antireflective, IR-reflective, mirror, color filters, ...
- Barriers against gases and leachables
- Abrasion and scratch resistance
- Antifogging/deicing
- Transparent conductive coatings (TCO)
- Easy-to-clean
- Hydrophobic, hydrophilic
- Decorative
- Lubricant
- ...

Coating Materials

- Dielectrics
- Metals
- TCOs
- Polymers
- Composite materials
- ...

Contract Manufacturing

With our team also supporting our in-house coating production facilities, we have the mind-set for the development of scalable processes and quality assurance issues.

Sampling and Lab-scale Production

- Plasma-impulse chemical vapor deposition (PICVD)
- Sputter deposition
- Sol-gel
- Liquid-phase coating: screen printing, spray and dip coating, …
- Flame pyrolysis
- ...

Pilot Production

- State-of-the-art in-line sputtering system
- Substrate size up to 550 x 730 mm\(^2\)
Coating Systems Engineering

We are experienced in the construction of a variety of coating systems as well as up-scaling challenges when transferring laboratory-scale equipment into production. Our team works in close cooperation with process engineers of both lab coaters and production systems.

Coating Systems Engineering

- Drawing up the specification book for your coating equipment and selecting suppliers
- Engineering of laboratory and pilot production coating systems
- Tailor-made high-precision gas and liquid delivery systems
- Simulations of vacuum systems, gas flow and microwave distribution
- Design of control systems and software engineering
- Mechanical design (2d and 3d CAD)
- Broad expertise in vacuum and microwave technology
- In-house machine shop

Additional Capabilities

- In-house cleaning facility
- Simulation of optical designs
- Systematic and efficient coating development: DOE-approach, data analysis tools, ...
Coating Characterization and Testing

With our broad materials and characterization expertise we have the capability of examining the combined properties and interactions of coatings and substrates. SCHOTT’s “Analysis Measurement Service” is accredited according to DIN EN ISO/IEC 17025:2005-08 and guarantees reliable and traceable results.

Functionality Tests

- Scratch and abrasion resistance (Taber, PEI, ...)
- Hardness (pencil, Erichsen, Knoop, Vickers, ...)
- Barrier tests: H₂O- and O₂-Permeation. Leaching, e.g. of sodium
- Contact angle: surface energy
- Conductivity: 4-point, Hall measurement
- Optical properties: optical spectroscopy, haze measurements, etc.
- ...

Lifetime and Reliability Tests

- Aging tests (accelerated): temperature & humidity exposure in climate chambers
- Adhesion tests

Composition and Microstructure

- See separate brochure “Analysis Measurement Service”
- SIMS mass spectroscopy
- SEM/EDX analysis
- AFM
- X-ray diffraction
- White-light interferometry
- ...

Consulting

You can benefit from SCHOTT’s coating experience in both R&D and production and from the knowledge and experience of SCHOTT’s scientists, engineers and technicians with access to state-of-the-art equipment.

We offer to assist you in

- the entire product development process – from setting up the specifications to the process transfer into production
- alignment of coating specifications with regard to performance and cost
- development of functional and decorative coatings for your application
- drawing up the specification book for coating equipment and selecting suppliers
- application support
- assessment of intellectual property status; technical and market studies.