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# Recent innovations of glass and glass-ceramic materials for products of today – SCHOTT AG (Selected examples)

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## Abstract

The material development of SCHOTT AG looks back on more than 130 years of experience in the field of specialty glasses and glass-ceramics. Innovations of specialty materials and new improved products are part of SCHOTT's DNA. Some examples will be given in this talk:

In the field of optical glasses, pioneering development first facilitated best microscopes to investigate pathogenic microbes in the 1880ies. Today, preventive mammography is conducted using optical x-ray-glasses from SCHOTT. Flexible light guides are used in varieties of microscopy applications, for example in medical and industry, e.g., lithography, to provide a clear visibility for better reliability.

The 1st picture of man on the moon taken with cameras using optical lenses from SCHOTT and the 1st exoplanet discovered with the Very Large Telescope (VLT) equipped with the world largest 8-meter monolithic glass-ceramic reflective mirror underline the role of optical materials in the investigation of far and outer space. On the other hand, on the nanoscale range, the production of integrated circuits on micro- and nanochips requires precise positioning of wafers. Here, SCHOTT ZERODUR® is ideal for lithographic structuring, too, with its expansion coefficient of almost zero.

Since more than 111 years, glass tubes of FIOLAX® borosilicate ensure highest quality for pharmaceutical packaging, e.g., billions of COVID-19 doses were delivered in SCHOTT's pharma vials only in 2021.

In the last 50 years, more than 200 million CERAN® cooktop panels have revolutionized kitchens around the world. Today, CERAN Luminoir™ is shaping a new cooking lifestyle with clear and true-color lighting solution to cooktops whereas ROBAX® NightFlame with its semi-transparent black fire-viewing panel is a (German Design Award 2022 winning) visual highlight in the living room.

Glass-to-metal seals form an essential core part for vacuum-tight feedthroughs and headers. In devices for airbags, they protect the ignitor charge from moisture while enabling reliable electrical signal transmission to the pyrotechnical load in the event of an accident. Thereby, millions of airbag ignitor parts of SCHOTT help to make cars safer and even save many lives every year.

For the ultimate display protection, SCHOTT provides outstanding thin and ultra-thin glasses with desired combination of flexibility, strength and scratch resistance. Latest generation of flexible SCHOTT glass can be bent to a radius of less than 1 millimeter. These ultra-thin glasses enable the most sophisticated foldable phones of today. More than 300 million smartphones are already equipped with SCHOTT's thin glasses and camera modules.

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