Contents

4   Healthier, thanks to light
6   Comfortable and safe from the very start
8   A “health room” instead of a sickroom
10  Focused light for greater confidence
12  Everything is exposed
14  Sending bio signals around the clock
16  An unbeatable combination: contrast & safety
18  Behind the scenes
20  Tender loving care for teeth
22  Together, for a healthier world
SCHOTT is an international technology group with more than 125 years of experience in the areas of specialty glasses and materials and advanced technologies. With our high-quality products and intelligent solutions, we contribute to our customers’ success and make SCHOTT part of everyone’s life.

For over 40 years, SCHOTT has been doing pioneering work in the field of light and image transmission. Our Lighting and Imaging business unit is a global leader when it comes to developing and manufacturing innovative fiber optics in combination with state-of-the-art LED lighting solutions and imaging fiber optic components. Now that we already have the ideas and the know-how, let’s turn the future into the present.
Fiber optic lighting
Superior lighting systems can be developed by selecting from a wide range of components.

Imaging fiber optics
Technological expertise in imaging means offering a comprehensive set of solutions.
Healthier, thanks to light

Welcome to a hospital for which safety and well-being aren’t just words. The patients here are in good hands when they are being examined and the doctors who make the diagnoses are supported to the fullest extent. High-tech solutions in medicine are no longer a vision for the future.

Thanks to the expertise in the areas of fiber optics and LED technology, SCHOTT has succeeded in developing high-tech solutions that center around the well-being of the patients. Advanced combinations of light and glass improve the quality of each diagnoses and therapies in medicine.

The technology that SCHOTT offers opens up exciting new possibilities towards developing new medical devices. Functional lighting and image technology create new opportunities for diagnostics. In addition, optical sensor and state-of-the-art measurement technology enable the highest possible accuracy when it comes to examining patients.

Last, but not least, therapies that use light and color to contribute to a patient’s recovery are now possible. This can all be achieved by combining our know-how with yours. Together we can achieve our mutual goal: The use of modern technology to help patients regain their health and feel more comfortable. And we’ve also given some thought to what these solutions might look like.

So please join us as we prepare to enter the hospital of the future.

APPLICATIONS

- Ambient lighting and room design
- Therapeutic lighting
- Functional light and image transmission
- Safety in functional areas
- Optical sensor and measurement technology

State-of-the-art LED lighting solutions
Functional, decorative and mood lighting for medical environment and equipment.
Light and colors are important to people’s physical and psychological well-being. Natural light is the benchmark for feeling comfortable. It changes constantly over the course of the day, controls our internal clock and affects us physiologically to make us feel either energized or tired.

Comfortable and safe from the very start

A pleasant ambience welcomes you when you enter our medical center of the future. Whether it’s used to brighten up people’s mood or to provide a sense of orientation, a lot depends on light and color when it comes to being able to move safely, calm our fears, and feel comfortable in new situations.
Light has signaling power | On the one hand, light guides patients through the halls and inside the rooms and serves as warning or safety signal for medical staff when used in devices. However, optical glass fibers are not only used for illumination, they can also transmit important bio signals.

Light makes diagnostics even more reliable | Brightness in itself does not guarantee an exact diagnosis. Different types of tissue structures can be detected and diagnosed accurately using special color rendering techniques and various wavelengths. Miniaturized image and light guides, as well as LED solutions, allow doctors to see around the corner and take a closer look into deep cavities. SCHOTT delivers light and resolution exactly where it is needed.

Light as an effective therapy | Therapy follows the diagnosis. Here, too, light guides us. For example, photo therapies for treating jaundice in newborn babies, as well as photodynamic or light therapies being used to treat depression and sleeping disorders provide us with only a brief overview of what can be achieved with light.
A “health room” instead of a sickroom

Check-in time. The moment you step into a patient’s room you’ll notice the special atmosphere that has been created here. The light and colors are selected to suit the specific situation. This targeted approach contributes to the healing process. After all, the body and soul can only heal if the patient feels good all around.

Whether it is to be used in special light therapy or to guide the way at night, SCHOTT IllumaMed offers the right light at the right time. It emits light and color signals to ensure that the patient is taken care of properly by signaling an alarm during treatments or by allowing the patient to call for help from the bedside. In addition, flexible fiber optic cables guarantee a high degree of freedom of design.

Many patients find reading a good book while lying in their beds a great way to relax. Any time is reading time with our elegant IllumaMed reading lights emitting a single bright LED light beam.

Thanks to a portable LED lighting system for treating jaundice in newborns, phototherapeutic treatments can even be added to the patient’s room. The mother no longer has to be separated from her baby.

Privacy is extremely important to most people. At the same time, not every patient can afford to pay for a private room. Here, SCHOTT MAGiRA® SmartView glass can be considered a real illusionist. With the special PDLC-based foil in a glass laminate, the flip of a switch can turn this transparent glass partition into an opaque wall. Ingenious staging of the room and how it is furnished can immediately turn a two-bed room into a single-bed room with a partition.

Light and glass instill comfort, both inside the patient’s room and when examinations are being performed. Our goal is never achieved until the patient feels nearly as comfortable staying in our hospital of the future as he would at home.
SCHOTT IllumaMed Reading Light

A newly developed standard technology combined with a wide variety of customization possibilities
Focused light for greater confidence

Come and be a silent observer in our operating room. Doctors are under immense pressure during an operation and conditions are often difficult. Our doctors feel a lot more secure, however, thanks to reliable light quality and focused illumination. This allows them to devote their complete attention to the patient and performing the operation.

The patient already knows he’s in good hands the moment he enters the operating room. The doctors exude a sense of confidence. They know they can rely on their instruments as well as their lighting during their most challenging and complex procedures.

Our new, lead-free PURAVIS® glass fibers deliver outstanding white light transmission and color rendering for ideal operating conditions. When used in laryngoscopes or surgical equipment to directly illuminate the operating field, it has proven to be an unbeatable tool for focusing light to exactly where it is needed.

Perfect illumination of the working area is also extremely important. When using surgical microscopes, the glass fibers are configured to suit various light guide designs for specific devices in order to provide the highest possible mechanical protection and high flexibility.

Not only typical fiber optic products are used to help doctors feel more confident in our operating rooms. LED head lights are small, light weight, and energy saving. Our surgeons rely on LED light sources with extremely high light intensity, like the LEDgine 2 from SCHOTT, to illuminate small cavities.

This only shows how technology and medical expertise can join forces inside an operating room.
LED head lamp
Small, light and energy saving

FUNCTIONAL LIGHTING
• PURAVIS® glass optical fibers
• Custom-designed light guides
• High-end LED illumination
Flexible image bundle
Highly-flexible, high resolution coherent image guide inside the endoscope.

Universal light guide
A temperature resistant light guide to connect a light source with the endoscope.

PURAVIS® high purity glass optical fibers for guiding light inside the endoscope.
Everything is exposed

Endoscopic procedures for diagnosing and treating illnesses are gentle on the patient and offer faster healing. Feel free to look over our doctors’ shoulders and convince yourself of today’s modern methods and advanced technology.

For doctors, the question of whether or not a surgical procedure actually helps the patient obviously depends on the accuracy of the diagnosis. This is why they insert minimally invasive endoscopes that emit light into the body and literally take a picture of what their patient looks like inside.

The optical system inside the endoscope consists of various elements. PURAVIS® glass optical fibers have different aperture angles and allow for various cavities inside the body to be illuminated evenly. Here, too, the quality and amount of light transmitted plays a key role. These factors also form the foundation for new diagnostic procedures such as optical biopsies for early detection of cancer. Fluorescence techniques and various types of illumination methods for contrasting tissue are only a few examples of these technologies.

Transmitting images through highly flexible image guides also plays an important role in flexible endoscopes. The high number of pixels of SCHOTT’s image bundles allows for extremely accurate diagnostics due to the high resolution.

Our doctors are fully aware of the special requirements that are placed on these medical products. The biocompatible and autoclavable properties of the materials used meet the high demands of frequent cleaning, disinfection and sterilization of the respective devices.
Sending bio signals around the clock

As you step in quietly, you immediately ask yourself whether this is really an intensive care unit. Hardly any cables and yet continuous monitoring of the patients make you wonder. The solution: glass optical fibers make it possible to improve patient comfort while monitoring critical bio signals.

Glass optical fibers not only transmit light to the body, but also conduct the light that reflects off of tissue to a sensor. Vital signs such as blood oxygen levels can then be calculated with the help of sophisticated algorithms.

Our light weight, fiber optic cables extruded with bio-compatible sheathings improve patient comfort by greater flexibility, even with multiple channels. This allows the sensor to remain on our patient during long-term monitoring to better ensure their health and safety.

Thanks to metal-free cables and finger clips, our medical staff and physicians can rely on the bio signals that are constantly sent. This means the sensor remains on the patient during the entire exam, even while the MRI is being used. This translates into safety for both the patient and the doctor without causing a disturbance.

These cables are used in the area of pulse oximetry or shock monitoring, but also optical topography. The configured fiber optic cable can be enhanced to include laser light sources with precisely defined wavelengths. This improves the signal-to-noise ratio and allows for the signals to be detected more reliably.
An unbeatable combination: contrast and safety

Take a seat next to our doctor and watch him take an x-ray. You don’t see anything yet? Well, that will change in just a minute. There’s no need to worry because special glass in our rooms protects you from harmful radiation.

SCHOTT offers x-ray protection glass that is extremely effective even in thin versions to protect you from being exposed to radiation by accident. In combination with SCHOTT IllumaMed Sidelights as the functional lighting system, hospital personnel and relatives will be made aware of the operating status of x-ray zones, windows and doors by the colors that change.

The patients at our hospital feel a bit more comfortable even during somewhat unpleasant exams. SCHOTT radiation shielding glass in combination with switchable MAGIRA® SmartView glass from SCHOTT, protection against radiation is combined with privacy. This glass turns transparent during and remains opaque both before and after an examination. This makes the patient feel less observed and therefore a lot more comfortable.

Protection from x-ray radiation isn’t only limited to individuals, however, but also includes the highly sensitive digital x-ray sensors. Optical fiber plates consist of a large number of extremely thin, individual fibers that are aligned perfectly parallel. These are located directly in front of the sensor that is in need of protection and transform x-ray radiation into visible light with the help of a special scintillator coating. The parallel alignment of the individual fibers noticeably increases the contrast in the x-ray image compared to other imaging techniques.

SCHOTT radiation shielding glasses RD30/RD50®
Optimum protection from x-rays

Fiber optic faceplates
High resolution image transfer for digital x-ray sensors

SCHOTT MAGIRA® SmartView glass
turns transparent during and remains opaque both before and after an examination

SCHOTT IllumaMed sidelight
turns to green during an examination
Behind the scenes

Diagnoses are made and the right medications and therapies are recommended behind closed doors. Come with us and see what goes on behind the scenes. We invite you to pay a visit to the hospital laboratory.

Our laboratory doctors and medical staff receive support from SCHOTT products. This is particularly true for clinical spectroscopic and photometric analyses, but also fluorescence techniques used for the patient’s blood and fluid analyses.

Very sensitive pharmaceuticals and drugs are carefully packed in SCHOTT ampoules, cartridges, vials and syringes.

Fiber optic light guides that deliver stable transmission of UV radiation, visible or IR light, also assist in examining microwell plates with cavities that contain extremely small amounts of liquids. SCHOTT’s intagliated faceplates and capillary arrays, with their precise geometries, enable reliable results in genomics, proteomics, drug discovery and micro-fluidic systems.

Stereo microscopy is yet another well-known and effective diagnostic technique. Our hospital laboratory relies on a broad range of LED and fiber optic lighting systems for various illumination techniques.

Pharmaceutical packaging
ampoules, cartridges, vials and syringes
made of tubing glass and polymer

Capillary arrays
High density hollow fiber arrays

KL 2500 LED
Illumination for stereo microscopy
Tender loving care for teeth

A modern approach to dental medicine that includes everything from prophylaxis to replacement is part of all-around medical treatment. You can see how relaxed this young patient sitting on the dental chair is as she puts herself in the hands of the dentist.

Despite how little room there is in the oral cavity, our dentists work with precision and accuracy. This is made possible by improved autoclavable lighting elements that are contained in handpieces, drills, and other instruments. The highest possible precision ensures that the shaped SCHOTT fiber rods fit into the narrow, product-specific construction spaces available in dental instruments.
In good hands thanks to SCHOTT. As inorganic fillers in composites, compomers and glassionomer cements, our dental glasses offer outstanding transparency, the highest degree of purity and extremely small grain sizes that allow for strong, nearly un-noticeable tooth fillings.

Patients take comfort in feeling safe. Bent fiber rods from SCHOTT that are lead-free and biocompatible enable clear detection of cavities and thorough curing of polymerizable tooth fillings.

Furthermore, we capture and store into our patients’ dental history using x-ray technology for which SCHOTT’s fiber optic faceplates are a critical component.
Together, for a healthier world

Completely surrounded by light and color, modern technology and with a special sense of comfort, we are now getting ready to leave our hospital of the future. Were we able to convince you? Well, then, why don’t we put our heads together?

SCHOTT offers more than just state-of-the-art high-tech products. Together with engineers in the area of medical technology, doctors and those responsible for hospitals and rehabilitation centers: Our aim is to design the future.

Companies looking to shape the future undoubtedly should also work hard to make sure the eco-system functions properly. For this reason, SCHOTT has its view set on reducing its consumption of energy and resources as well as the emissions caused by manufacturing glass.

For example, our high-purity PURAVIS® glass fibers are manufactured without using lead, arsenic or antimony. Therefore, all of our PURAVIS® products meet the EU regulations RoHS and REACH.

We would love to work with you on leveraging innovative new technology for the good of humanity. Our goal is to produce customized solutions for both the users and patients. Together, we can reinvent the world of healthcare.