High-Resolution Imaging Technology and Micro-Optical Design for Endoscopes

Pioneering Micro-Optical Structures for Medical Imaging

In the field of medical diagnostics and minimally invasive surgery, **high-resolution imaging** is not just a luxury — it's essential for accurate diagnosis and successful treatment outcomes. As an innovative **optical design company**, Yighen Ultra Precision is leading the way in developing **micro-optical structures** tailored specifically for endoscopic systems.

Endoscopes require compact, high-performance optical components capable of delivering crystal-clear images in confined spaces. To meet these demands, we leverage advanced simulation tools and ultra-precision machining techniques to design and fabricate micro-scale optical elements with exceptional surface accuracy.

Engineering Clarity at the Micro Level

Our freeform lenses and diffractive optics offer superior light control, reduced aberrations, and enhanced image resolution — all critical for real-time surgical guidance and diagnostic clarity. By optimizing light path management, we achieve higher numerical apertures, improved depth of field, and minimized distortion across both rigid and flexible endoscope designs.

We also support emerging trends in **multi-spectral imaging**, **fluorescence detection**, and **3D reconstruction**, helping healthcare providers unlock new diagnostic capabilities. With custom anti-reflective coatings and high-transmission materials, we further enhance contrast and visual fidelity — making our lenses indispensable for modern medical imaging systems.

From Theory to Reality: Yighen's Technical Capabilities

Behind every breakthrough is a team of experts who bring vision to life. At Yighen, our engineers hold advanced degrees from prestigious universities and specialize in **optical design, ultra-precision machining, and biomedical imaging applications**. Their combined expertise ensures that every component we produce meets the strictest regulatory standards and performs reliably in clinical environments.

Headquartered in Singapore, our **Nano Machining Center** features state-of-the-art machinery like the **NanoTech 650 FG**, enabling us to maintain tight tolerances even at microscopic scales. We work closely with medical device manufacturers to deliver customized optical modules that fit seamlessly into next-generation endoscopic platforms.

Backed by Strategic Partnerships and Investment

Yighen is supported by leading investment firms such as **Inno Angel Fund and Hou Tian Capital**, and is integrated into **Xiaomi's broader ecosystem**, which accelerates our ability to commercialize advanced optical technologies globally.

Empowering the Next Generation of Medical Imaging

As the demand for miniaturized, high-performance optical systems continues to grow, Yighen Ultra Precision remains committed to advancing the frontiers of **micro-optical structure design**, delivering imaging solutions that empower the next generation of medical devices.

Established in 2021, Yighen Ultra Precision has quickly emerged as a high-growth player in the advanced optical manufacturing sector. The company combines deep technical expertise with proprietary technologies to serve high-margin markets including AR/VR, biomedical imaging, and consumer electronics.

Backed by prominent investment firms such as Inno Angel Fund and Hou Tian Capital, Yighen operates a state-of-the-art Nano Machining Center in Singapore equipped with ultra-precision tools like the NanoTech 650 FG. Our patented processes, including ultrasonic-assisted SPDT and dynamic error compensation software, significantly enhance production efficiency and product performance.

With strong ties to Xiaomi’s broader ecosystem and a growing intellectual property portfolio, Yighen is well-positioned for rapid international expansion and long-term technological leadership.