Augmented reality moves closer to reality with new materials

Augmented reality (AR) is working its way into the mainstream. If you've ever captured little monsters through the screen of your smartphone while playing Pokémon Go, you're already familiar with AR, which overlays images or data on the real world.

Simply put, this technology is one likely to usher in the next generation of computing and will have a tremendous impact over the next several decades.

IDC estimates that sales of AR glasses over the next few years will rival those of the Sony PlayStation, reaching $30 billion in headset sales by 2021 as technology advances and the commercial applications for AR expand.

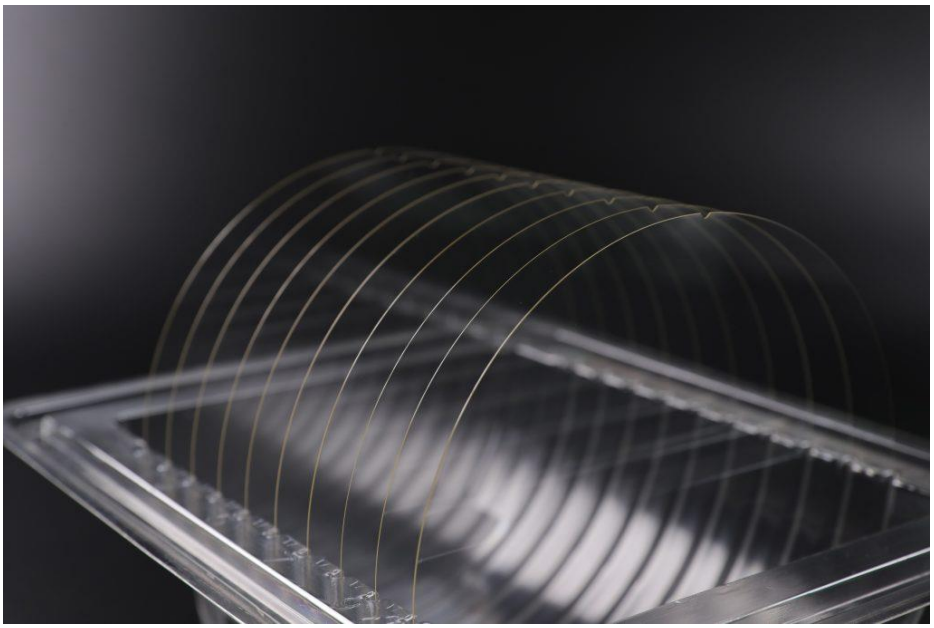
To propel AR into the future and make the consumer experience more realistic, developers need a glass that widens the field of view (FOV) found in many devices.

For the developers of AR glasses, FOV is a key performance standard upon which lens material is evaluated. Ideally, AR glasses would match humans' natural FOV, but so far they've been much more limited.

SCHOTT has recently made a breakthrough to enhance the AR experience.

SCHOTT RealView™ customized optical glass wafers are designed to maximize the FOV for AR devices through a high refractive index. Instead of confining the AR experience to the tunnel-vision view that devices made with regular glass provide, SCHOTT RealView™ offers a wide, expansive FOV.

To facilitate the best possible image quality, SCHOTT RealView™ is 10 times flatter, measured as Total Thickness Variation (TTV), than industry-standard glass wafers.



How AR will transform industries

In the hospital, surgeons wearing AR glasses might see vital signs on their display while performing surgery. In the car, AR glasses or the windshield itself can be integrated into heads-up displays, but could go even further by incorporating more information, like GPS coordinates for direction. At Boeing, AR is used to guide traineeson the steps required to build aircraft parts, cutting the time it took trainees using traditional two-dimensional plans by more than one-third.

Scientists and engineers might use AR to see invisible portions of the electromagnetic spectrum imposed on the world. Students might use it to see speeches by history's changemakers, while manufacturers might use it for data tagging and quality control. Gamers could use AR glasses to have virtual snowball wars with strangers in cities or go on scavenger hunts with clues visible only to the players.

The medium for these advances will be smart glasses, worn on the face like corrective lenses, with sensors that take in data, and complex optics to render useful information or images into the user's line of sight.

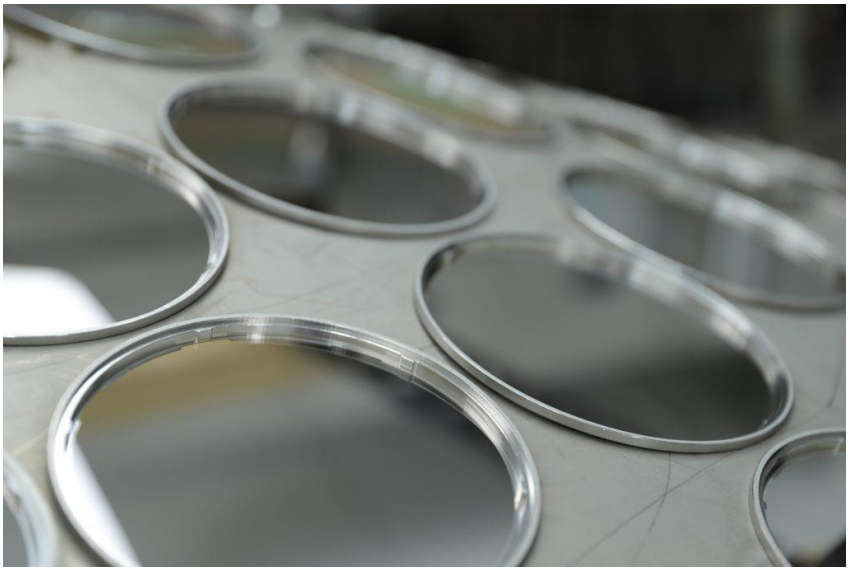
Creating a better AR experience

Making a viable AR system requires several technological leaps, all contained in a unit small and light enough to be comfortable for the user. But there's no real roadmap. Developers must make an array of choices on materials and systems small and large, from displays, to haptics, to new imaging algorithms.

Developers aiming to produce realistic AR imagery will also need to invent powerful, tiny projectors capable of contending with the brightness of the sun.

Despite these challenges, nearly every major technology company, including Google, Amazon, and Facebook, have AR projects that are working to tackle these problems. Apple is said to be on the hunt for a processorhalf the size of the one found in the iPhone X to power its AR offering.

Expertise for AR glasses



With expansive expertise in optical glass, and a portfolio of over 120 optical glasses, SCHOTT has not only been focused on technical breakthroughs, but has also entered into several joint ventures to ensure production capacity can meet the expected ramp-up in demand.

New materials will only stoke the fire for AR as systems improve and seamlessly impress a virtual world onto the real one. From there, the applications are endless.