

July 18, 2019

Nippon Electric Glass Co., Ltd.

Successful Development of Infrared Lenses Using World's Highest Performance Infrared Transmitting Glass

Nippon Electric Glass Co., Ltd. (Head Office: Otsu, Shiga, Japan, President: Motoharu Matsumoto) has successfully developed infrared lenses using a new type of glass. By using the world's highest performance^(*1) infrared transmitting glass as infrared camera lenses, clear and bright infrared image can be captured.

Infrared light is mainly used in security cameras, thermography, gas sensors, and controlling air conditioners. One of its latest applications is night vision cameras for automobiles, which improve safety in night-time driving. With increasing demand for infrared cameras and expanding markets, high-performance lenses that can be mass produced are required.

Infrared cameras require lenses made of germanium single crystal^(*2) or chalcogenide glass^(*3). Germanium single crystal has an advantage of high infrared transmittance property, but mass production is difficult because press molding cannot be applied. As an alternative, chalcogenide glass, which can apply press molding, has come into use, however, its infrared transmittance property is lower than germanium single crystal. In addition, ordinary chalcogenide glass often contains harmful substances such as arsenic and selenium, which could have a negative impact on the environment.

The new glass developed by Nippon Electric Glass has higher infrared transmittance property (wavelength up to 20 μm can be transmitted.) than germanium single crystal and ordinary chalcogenide glass, which contributes to improving brightness and clarity of infrared images. This glass is free from any harmful substances. In addition, press molding processes can be applied and it enables mass production of lenses. Its processability into aspheric lenses and the world's highest refractive index^(*1) in glass material, 3.4 (at wavelength of 10 μm) contribute to making thin and high-performance lenses.

This successful development will be presented at the Infrared Array Sensor Forum held on July 26 (at the Osaka Ibaraki Campus of Ritsumeikan University).

(*1) Surveyed by Nippon Electric Glass in July 2019

(*2) Symbol for element is Ge. A crystalline material with the property of transmitting infrared light

(*3) Glass made mainly from chalcogen elements, such as sulfur and selenium

[Characteristics and advantages of the new products]

- The world highest IR transmitting property . . . Creation of bright and clear infrared images
- Press molding process can be applied . . . High mass productivity
- High refractive index . . . Contributes to reducing lens thickness
- High processability . . . Distortion-less images by aspheric lenses
- Free of harmful substances . . . Reducing environmental impacts

[Photograph of products]



New infrared lenses

[Comparison between infrared camera images]



(a) Lens made of the new glass



(b) Lens made of ordinary chalcogenide glass