By Asian Scientist Newsroom

**Diagnosing Glaucoma In A Blink**

The GonioPEN causes less discomfort and can detect glaucoma more quickly and less expensively than current diagnostic methods.

(Apr. 16, 2018) – Scientists at Nanyang Technological University, Singapore (NTU) and clinicians from the Singapore Eye Research Institute (SERI), have invented a ‘pen camera’ that makes it easier for doctors to diagnose patients with glaucoma.

Glaucoma is a leading cause of blindness in the world. It has no early symptoms, but a build-up of pressure inside the eye can be an indicator. In Singapore, about three percent of people over the age of 40 years—or over 65,000 people—have glaucoma. This percentage rises with age.

The current gonioscopy method to diagnose glaucoma takes up to 15 minutes to perform and requires a skilled specialist’s expertise to identify the problem on the spot. It is not routinely done in clinics, and as a result, half the patients in Singapore do not go through the test in clinics, leaving glaucoma largely undiagnosed.

In this study, a team of scientists led by Associate Professor Murukeshan Vadakke Matham, Director of NTU’s Centre for Optical and Laser Engineering, in collaboration with Professor Aung Tin, the Executive Director of SERI, built a ‘pen camera’ that could detect glaucoma rapidly and inexpensively.

Called the GonioPEN, the device causes negligible discomfort, unlike the current gonioscopes which are glass scopes that must be pressed against the eyeball of the patient for doctors to look at the eye’s drainage canal. The GonioPEN allows doctors or trained technicians to capture detailed images of the eye drainage canal with minimal contact at the
side of the cornea. Software is then used to analyze the images, helping doctors and eye specialists with their diagnosis.

“With the GonioPEN, a digital camera image of a higher resolution can now be stored for future reference and retrieved easily. A technician could perform the gonioscopy before a specialist reviews the images to give an in-depth diagnosis or a second opinion. Doctors can also better track the changes in their patients’ condition over time,” said Murukeshan.

“The GonioPEN’s ease of use means it can be used by primary, secondary or private eye care physicians, while its compact size makes it portable for all healthcare set-ups. The cost is also kept low because a microscope is no longer required,” he added.

In a pilot study, all 20 patients found the GonioPEN more comfortable than the conventional hand-held lens used with a microscope.