

GPOL Opens Its Doors: A New Lab for Photonics and Optics Research in Ghana

The Kwame Nkrumah University of Science and Technology (KNUST) launches the Ghana Photonics and Optics Laboratory (GPOL), aiming to advance photonics education and research in Ghana and West Africa.
The launch took place together with the i¿½Nyansapo Photonics School for Health and Safetyi¿½, with ICFO researchers as members of the faculty.

October 08, 2026

Five years ago, Emmanuel Amuah came to ICFO to begin his PhD under the supervision of then-ICFO professor Simon Wall, and later moved with him to Aarhus University, where he completed his doctorate. During his time at ICFO, Amuah was so grateful for the opportunities he had received that he wanted to extend them to others, so he proposed holding a Frontiers school in his home country, Ghana. The idea became what was known as

the first ICFO-KNUST school, a school held in 2023 that sparked conversations about creating a permanent research and teaching lab.

Three years later, that initial seed of the idea has now germinated into the Ghana Photonics and Optics Laboratory (GPOL), which officially opened its doors on September 23rd of 2026 in Kumasi, Ghana. Funded by SPIE and supported by ICFO and other international partners, the program and the inauguration of the lab has been coordinated by **Dr. Akyana Britwum**, Principal Investigator and Scientific Lead, and **Dr. Michael Kweku Edem Donkor**, Technical Lead and Co-Principal Investigator, both researchers in the Department of Physics at KNUST (Kwame Nkrumah University of Science and Technology) in Kumasi, Ghana's second-largest city. SPIE was represented at the event by Allison Romanyshyn, the society's Chief Engagement Officer.

The goal of opening this lab is to strengthen the country's capacity in light-based science by building instruments for health and environmental safety applications, such as testing devices, affordable diagnostics equipment and reliable sensors for heavy metal detection in soils and water. For **Dr. Akyana Britwum,** "Science is a global community, and no laboratory grows alone. We owe this week to our collaborators, those who travelled to be at the launch and those who could not be in the room but built it with us all the same. For me and for our community, the School meant that the frontier of science came to Kumasi and our students had the opportunity to stand at that frontier and begin to think about what their contributions could be. That is what research sovereignty looks like: Ghanaians asking their own questions with their own instruments. For the students, the opening of the GPOL means the instruments do not leave when the visitors do. They arrived feeling unsure and untethered; they now see the opportunities in front of them, and they are excited to take them."

As for Dr. Michael Kweku Edem Donkor, the opening the GPOL gives i¿½new opportunities for Ghana's brilliant students to train and build careers in light-based science and technology. It also creates a platform for Ghanaian researchers and experts abroad to bring home their knowledge, experience, and innovation. By connecting talent at home and abroad, GPOL is helping build a stronger research community focused on the needs of Ghana, the West African sub-region and Africa on the whole.i¿

A photonics school for health and safety

As part of the inauguration, the GPOL organized the i¿½Nyansapo Photonics School f r Health and Safetyi¿½a dedicated school to explore how photonics is driving innovation in health and safety.

The school took place in Kumasi and brought together 55 participants, including students, researchers, and industry professionals from six African countries, Europe and North America. Three of participating speakers were ICFO researchers **ICREA Prof. at ICFO Turgut Durduran** and PhD student **Mirko Fornasier** from the Medical Optics group and **Dr. Michael Tayler,** staff researcher at the Atomic Quantum Optics group. Over the course of a week, they shared with the students the science behind their devices and instruments through lectures, lab sessions, and even an improvised hands-on session on a late Saturday night. i¿½I was very impressed by the eagerness and curiosity of students, they came very well prepared and had studied extensively and read all our papersi¿½, says **Prof. Durduran.** i¿½ Students were really ready to learn, asking a lot of questions and getting involved in everything, I even found myself building a device in the middle of the lobby! It became an improvised workshopi¿½.

Many of the attendees were seeing the research and teaching labs for the first time. **Dr. Tayler** gave a specific training session on operating a nuclear magnetic resonance device, which has been donated to the lab together with several other instruments, microscopes and optical tables.?

Hospital visits, a community event and a tailor-made kente cloth

Although the official launch of the GPOL was one of the week's highlights, it was certainly not the only one. Alongside the celebration of the school, the researchers visited two hospitals. They first visited the Neurosurgery Unit of the Komfo Anokye Teaching Hospital where they had the chance of seeing the emergency clinic, intensive care units, neonatal intensive care, general wards, radiology and discussed potential collaborations and use cases with the provost of the hospital.

The group then visited the AGA Health Foundation Hospital in Obuasi, where they were hosted by Dr. Justin Sonaa Dakorah, Chief Medical Officer at the AngloGold Ashanti Obuasi Mine and the AGA Health Foundation. They also met Kwadwo Boahene Atua Anim, the hospital's executive director. Together, they discussed the specific health challenges faced by mining communities and exchanged ideas for research, future projects, and new ways of working together to develop instruments that could benefit patients.

Toward the end of the trip, both students and faculty travelled south to Hwiremoase to visit the Ghana Christian International High School. There, they met with more than 200 senior high school students from local institutions, who had the opportunity to learn about photonics and its applications for the first time, directly from experts in the field.?

To close the school, participants received a particularly meaningful gift: a kente clot custom-designed for the occasion by Mr. Isaac Gyasi and SPIE President Dr. Peter de Groo . Hand-woven in cotton and silk, kente is one of Ghana's most powerful cultural symbol , traditionally worn at important ceremonies and commemorations, and its craftsmanship s recognised by UNESCO as part of the Intangible Cultural Heritage of Humanity. Presenti g this cloth to every participant during the closing ceremony was a way of honouring t

e significance of the school and marking it as a truly historic occasion for Ghanaian scienc
. In the future, this strong collaboration will create more pathways for students, teachers, a
d early-career researchers to engage with optics in practical ways.













