ICFO-KNUST host first Research School on the Frontiers of Light in Ghana

International experts promote career opportunities in the photonic sciences

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Training the next generation of scientists and technologists has always been at the center of ICFO's mission and Frontiers Schools play an important role in introducing thematic research? to students worldwide, as well as offering a taste of in an international research environment ICFO is able to magnify the reach of these Schools, which incorporate a dynamic and socia learning environment including lectures, group discussions, direct interactions with th lecturers, student talks, and poster presentations, by partnering with leading internationa organizations. The Schools have been operating since 2016, in recent years expanding i frequency and diversifying in structure and location. In 2019, ICFO teamed up with th Centre for Applied Physics and Advanced Technology of the Universidad Nacional Autonom de Mexico (CFATA-UNAM) in Mexico to organize its first International School and has sinc

collaborated with them for three successful editions. It has likewise partnered with th Weismann Institute (IS), Massachusetts Institute of Technology (USA) , University of Toron o (CA), and PTL- Stanford (USA) to offer amazing programs on exciting and relevant topic . On October 9 - 13th, ICFO, in collaboration with Professors Michael Kweku Edem Donko , Akyana Britwum, Henry Martin, and Francis Ampong of the Physics Department in he College of Scienceat the Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi, Ghana, ran the first ICFO Frontiers School in Africa within the SPIE@ICFO Chair for Diversity in the Photonic Sciences. The ICFO-KNUST International School on the Frontiers of Light titled i¿½Photonic Sciences: Applications and Opportunitiesi¿½, brought together around 50 physics students primarily from KNUST and other universities in Ghana, as well as students from other African universities in Kenya, Nigeria and Rwanda who received international travel fellowships to travel to Kumasi for the program sponsored by ICTP. The School also welcomed students attending from as far afield as India and Finland. Topic covered in this 5-day program included Clean Energy, Medical photonics, Ultrafas spectroscopy & Quantum Materials, Terahertz spectroscopy, Quantum sensing, and Optica metrology presented by professors and speakers from industry and academia from ICFO KNUST, the SPIE and from around the world

i¿½The collaboration with ICFO for the Photonics School has been a momentous occasion for the Department of Physics at KNUST. This initiative has perfectly complemented our aspirations to introduce and integrate photonics into our curriculum. While we may not have a dedicated photonics unit yet, the enthusiasm and eagerness of our students and faculty, combined with the expertise from ICFO, SPIE, and other global partners, has painted a clear picture of the potential and direction headed,i¿½ explained **Prof Donkor**. i¿½This school h s not just about exploring the possibilities in photonics; it has laid the foundation f r its future here in KNUST.

The School was made possible thanks to generous sponsorship from the SPIE to provide the funds to cover accommodation, catering and travel costs for students attending from within Ghana. **SPIE Vice President Peter de Groot** (Zygo Corporation) and **Community Engagement and Chief Inclusion Officer at SPIE Allison Romanyshyn** joined as lecturers and participants, along with **SPIE lecturer Martin Leahy** from the University of Galway, Ireland, who joined via video link. i¿½Staging this International School in Ghana aligns well with SPIE's strategic go l of creating an inclusive optics community for talented students and researche s worldwide,i¿½affirmed de Groot.

In 2020 SPIE, the International Society for Optics and Photonics, endowed ICFO with the **SPIE@ICFO Chair for Diversity in the Photonic Sciences** which aims to promote diversity and to support new talent in photonics that will enhance innovation, creativity and excellence in research. The Chair?s remit is to reinforce ICFO's activities for the promotion of diversity in all its forms, starting with its multiple programs to support the education and careers of young female scientists from diverse backgrounds. The ambition for the Chair goes beyond

gender diversity and aims to broaden the diversity in photonic sciences in general by supporting motivated students and researchers in the field who would otherwise not have such opportunities.

The seeds for the ICFO-KNUST School were planted shortly after the launch of the SPIE Chair at ICFO when **ICFO PhD student Emmanuel Amuah**, currently finishing his PhD research a Aarhus University in the group of former ICFO professor Simon Wall , suggested t e possibility of a collaboration with his alma matter. i¿½eing at ICFO has been a life-changing experience for me and from my early days as an ICFOnian I began wondering how others like me could benefit from the kinds of opportunities that ICFO offers. I was excited when I learned that ICFO had the support of the SPIE chair and was looking to expand the diversity of its training programs. This meant that bright and highly motivated students from KNUST would be able to benefit firsthand from world leaders in a field they would otherwise not have access to. I would have greatly appreciated this opportunity when I was a KNUST student, i¿ ? he explained. Amuah helped to bring the institutes together and was actively involved in t e success of this initiativ

. Speakers, SPIE representatives and participants all came away invigorated by the success f the program. i¿½find interacting with students extremely fulfilling, especially when they are truly engaged and prepared, which was absolutely the case in Ghana. I was impressed by the motivation and capabilities of everyone there,i¿½ commented **ICREA Prof at ICFO Morgan Mitchell** on the experience of teaching in this program. **Prof Robert Sewell, head of Academic Affairs** at ICFO, was equally positive. i¿½It was an honor to collaborate with the excellent faculty of physics at KNUST and colleagues from SPIE and enjoy the warm hospitality of their students. As scientists we are at our best when we are opening our minds to collaborate and learn from each other. As educators we aim to offer the best possible opportunities to students and young researchers world-wide. This happened all week and it was unforgettablei¿½. i¿½SPIE was thrilled to be a part of this program, and truly appreciated the effort made by the organizers and instructors alike,i¿½ added Allison Romanyshyn. i¿½I expect great things from these students and look forward to seeing what contributions they make to our future.i¿

? Many of the School's, participants, like **Ephraim Rodgers**, a student at KNUST, summed up their experience in glowing LinkedIn posts. i¿½It wasn't just about absorbing mind-boggling facts; it was the high-energy atmosphere and the passionate discussions that fuelled my excitement. The buzz of conversation, the spark of curiosity, and the hands-on experience with the Photonics Explorer Kit made every moment unforgettable,i¿½ he added. **Evans Yiadom Boakye**, also studying at KNUST, shared that i¿½Although the program concluded a week ago, the lessons I learned will stay with me for a lifetime. This has truly been the highlight of my year, and I extend my heartful thanks to the scientific organizers who made all of this possible.i¿

? Drs. Viktoriia Holovanova and Barbara Polesso, postdoctoral researchers in the C2DMAP

group at ICFO who participated in the School offering a joint talk on decarbonization technologies, also had very positive take-aways. i¿½The program covered different applications of photonics and in all the lectures and seminars, students were really engaged, i¿½ commented Barbara. Struck by the students' eagerness to connect in the breaks nd activities that took place around the formal program, she added, i¿½They were interested not only the concepts, but also how they could implement this in KNUST or the possibility of studying and working abroad.i¿½ Likewise enthusiastic about the experience, Viktori a declared, i¿½This was a lifechanging experience for me and I am grateful for the opportunity to participate. I was particularly impressed by the ingenuity of the students and the deep conversations that we had. I really hope that this event may be the start of many new collaborations and student exchange programs, which could bring our scientific communities even closer.i¿½