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A growing crystallographic community: new outreach and education initiatives at the IUCr

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At a time when scientific endeavour is critical for societal benefit, the importance of crystallography is greater than ever, yet it remains a science that still has lower visibility than it should. Crystallography underpins all science today, as it enables the inner structure of matter to be accessed and relates it to the properties and functionality of any kind of compound. Understanding the structure of matter has given a new path to scientific research, has transformed industries and created new frontiers, from the design of new medicines and materials to assessing the mineral content of Mars.

In 2014, the International Union of Crystallography partnered with UNESCO to celebrate the success and importance of our science to a broad audience through an International Year of Crystallography (IYCr2014), proclaimed by the UN through Resolution A/RES/66/284 of 12 July 2012. With this resolution, the UN recognized that humankind's understanding of the material nature of our world is grounded, in particular, in our knowledge of crystallography, and stressed that education about and the application of crystallography are critical in addressing fundamental challenges. To build on the success of IYCr2014, the IUCr and partner institutions signed the "Crystallography for the Next Generation" resolution (Morocco, 2015) and committed to enhance the stature of crystallography; build capacity in developing regions of the world; extend further the public understanding of science in general and crystallography in particular.

Nevertheless, fundamental courses on crystallography are disappearing from most academic degree curricula and are almost absent in the developing countries.

The IUCr is actively engaged in a number of outreach and educational initiatives, targeting several regions worldwide and particularly, emerging countries in Africa, Latin America, Middle East and SE Asia, and students of all ages, from schoolchildren to early career researchers and young professors. The IUCr-UNESCO OpenLab has already reached over a thousand students in 25+ countries, and is providing high-level educational opportunities to local students and young professors. The IUCr-IUPAP-ICTP *LAAAMP* programme has initiated several educational programmes targeting from high-school teachers to experts in the field. At the X-TechLab, the crystallography hub established in Benin through the *LAAAMP* project, training sessions, which include hands-on tutorials on top-quality crystallographic instrumentation, are targeting students, researchers and young professors from the whole African continent; in addition, symmetry courses for high-school and university students have already reached a thousand students. Several educational activities are also done in collaboration with initiatives related to the development of new synchrotrons, e.g., the African Light Source or the initiative for the synchrotron in the Caribbean. Through this journey, this presentation will show how these initiatives contribute to the building of the crystallographic community.