Crystallography schools and other educational activities in Latin America during the COVID-19 pandemic

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Crystallography research in Latin America started with the pioneering work of Prof. Ernesto Galloni in Buenos Aires, Argentina, during the 1940s. The progress in several countries was very fast and, during the 1950s and 1960s, courses on crystallography were given regularly in Argentina, Brazil, Chile and Mexico. The first international crystallography course in Latin America was probably the "Latin American course on Pure and Applied Crystallography" held in Santiago, Chile, in 1959, which was the birth of the Ibero American Crystallographic Group. This group organized several meetings and courses during 35 years. Unfortunately, due to economic problems and the long distances among the countries involved, this group was finally dissolved. The Latin American Crystallographic Association (LACA) was founded in October 2013 in Córdoba, Argentina, and recognized as a Regional Association of the IUCr during the 22nd IUCr Congress and General Assembly (Montreal, Canada, August 2014). At present, this association has seven full members (Argentina, Brazil, Mexico, Chile, Costa Rica, Uruguay and Venezuela) and organizes several meetings, schools and OpenLabs. The International Year of Crystallography 2014 (IYCr2014) was an excellent opportunity to increase the work related to education and outreach throughout Latin America and several activities were carried out, including exhibitions, science fairs, art or photo contests, outreach talks, etc. In addition, very successful national crystal growing contests were organized in Argentina, Chile and Uruguay, which also involved short courses on crystallography and crystal growth for primary and secondary school teachers. Most of these activities were organized during several years with great success.

Nowadays, there are an important number of regular local, national or international courses in Latin America, covering all kind of topics: single crystal X-ray diffraction, powder diffraction, fundamental crystallography, protein crystallography, crystallization methods, synchrotron radiation techniques, neutronic techniques, small-angle X-ray scattering, X-ray absorption spectroscopies, etc. Many of them are organized by national crystallographic associations, while LACA has a regular regional Crystallography school. In most of the cases, the topics taught in these courses involve applications in a wide variety of areas, resulting in interdisciplinary activities that are enriching for all the participants.

The COVID-19 pandemic was a global challenge and many congresses, schools, courses and outreach activities in Latin America had to be postponed or cancelled. However, as 2020 progressed, some of these difficulties were overcome. For example, the 3rd LACA school on Small Molecule Crystallography, planned to be held in Mexico in March 2020, was postponed, but it was finally held in a virtual modality in November/December 2020 with great success. Many virtual courses were also organized and some of them, thanks to the online modality, reached new regions or countries. Such was the case of the short courses on crystallography and crystal growth organized by the Argentinian Association of Crystallography (AACr), that in 2020 had to be taught in a new virtual format. These courses received a large number of new participants not only from Argentinian cities not previously visited by AACr members, but also from all over Latin America.

Finally, it is worth to mention that the crystal growing contests organized in Argentina and Uruguay continued in 2020, this time proposing that students work from home with simple and inexpensive materials, without any danger. In the case of the contest organized by the AACr, bibliographic research works related to crystallography were also accepted in the 2020 edition, allowing the participation of students that could not grow crystals at home or school. Once again, both contests were highly successful and are planned to be continued in 2021.

Keywords: Teaching of Crystallography; Outreach; Latin America