The Colloquium Programme and other activities of *LAAAMP*¹



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Synopsis: The LAAAMP Colloquium Programme is aimed at dispatching Advanced Light Source (AdLS) users and crystallographers to universities and other institutions to give presentations on the capabilities of AdLSs and crystallography and engage in discussions on how they can enhance researchers' investigations and offer career opportunities for university students. LAAAMP, which stands for Lightsources for Africa, the Americas, Asia and Middle East Project, is an initiative funded by a 3-year, EUR 300K grant from the International Council for Science (ICSU) to the International Union of Pure and Applied Physics (IUPAP) and the International Union of Crystallography (IUCr) in collaboration with over thirty partner organizations that include sixteen AdLS facilities to enhance the utilization of advanced light sources and crystallography in five targeted regions of the world, namely Africa, the Caribbean, Mexico, Southeast Asia, and the Middle East.

Introduction

Synchrotron light sources are the most sophisticated example of an open and multidisciplinary research infrastructure. Because of their high costs and multidisciplinary use, AdLS facilities provide strong opportunities for integration through networking and cost-sharing, and promote multi-disciplinary collaboration with the wider global community, while promoting science diplomacy and peace at large. Thus, AdLSs have become prime enablers of scientific and technological progress and innovation, conducive to sustainable development in line with the United Nations 2030 Agenda.

AdLSs have revolutionized research in many science and technology disciplines, leading to a proliferation of facilities worldwide. The website **lightsources.org** has links to some 47 facilities in 23 countries in various stages of operation, construction or planning. However, no AdLS facility operates in Africa or the Caribbean; Brazil hosts the only synchrotron facilities operating in Latin America, with plans taking shape for buinding a new one in Mexico, while SESAME is the only facility planned for the Middle East.

Within this framework, the IUPAP and the IUCr are partnering with ICSU (since July 2018, International Science Council, ISC) through the *LAAAMP* project, entitled in full 'Utilisation of Light Source and Crystallographic Sciences to Facilitate the Enhancement of Knowledge and Improve the Economic and Social Conditions in Targeted Regions of the World', to enhance AdLSs and crystallographic sciences in Africa, Mexico, the Caribbean, Southeast Asia and the Middle East.

LAAAMP structure

LAAAMP is managed and directed by the Executive Committee, which includes Sekazi K. Mtingwa (Chair), Chair of the IUPAP C13 Commission for Development; Michele Zema, Executive Outreach Officer at the IUCr; and Sandro Scandolo, Head of Scientific Programmes and Outreach at the Abdus Salam International Centre for Theoretical Physics, ICTP.

The governance of *LAAAMP* also includes five Regional Adls Usage & Strategic Plan Committees, one for each of the targeted regions; a *LAAAMP* Brochure editor; a Steering Committee; a Usage Database Committee; and institutional observers.

LAAAMP tasks

At conception, *LAAAMP* identified five tasks to pursue, namely:

(1) conduct a survey of crystallography and advanced light source (AdLS) users in the targeted regions and develop a Strategic Plan for each;

(2) send seasoned AdLS users to the targeted regions under the Colloquium Programme to enhance researchers' knowledge of crystallography and AdLSs and how they can be of benefit in their research and training of students, and become a partner in the launch of IUCr–UNESCO LAAAMP OpenLabs, which is a network of operational crystallography laboratories in developing countries;

(3) develop and disseminate an informational, nontechnical brochure that explains the tremendous dividends derived from crystallography and AdLS research and training;

(4) send FAculty–STudent (FAST) Teams to any of the sixteen AdLS partners around the world for two months of training, mainly on the beamlines, and when possible, allow them to continue the training for another two months the following year; and finally

(5) convene a meeting to present the Strategic Plans and launch more detailed Business Plans that include feasibility studies of constructing AdLSs in regions where they do not currently exist.

LAAAMP achievements

LAAAMP is in full swing. The following tasks have been achieved:

(1) preparation and distribution of a brochure on *Advanced Light Sources and Crystallography: Tools of Discovery and Innovation* in English, French and Spanish;

(2) over 30 FAST (FAculty–STudent) teams from targeted countries visiting partnering AdLS facilities for a period of two months;

(3) participation in important science policy meetings, *e.g.* World Science Forum 2017; CiLAC Forum 2018; PCCr2/AfLS2 Conference; UNESCO's Opening Ceremony of the International Year of the Periodic Table 2019; World Science Forum 2019 (scheduled);

¹ Lightsources for Africa, the Americas, Asia and Middle East Project, an IUPAP and IUCr ICSU-Funded Project

(4) Colloquium presentations given by experts in several targeted countries, with outcomes including the establishment of the Xtech-Lab in Benin, a crystallography and microtomography hub for Western Africa.

Furthermore, close collaborations with the African Light Source and Mexican synchrotron initiatives have been put in place. It should be noted that approval has been obtained for the construction of a synchrotron in Hidalgo, Mexico, and the President of Ghana has formally endorsed a proposal for an African Light Source and would present it at the African Union meeting in July 2019.

Strategic Plans for the development of AdLS and crystallography in the targeted regions of the project are being worked on and plans are in hand for their distribution in 2020.

The future is bright for *LAAAMP*. In anticipation, it has launched its 2019 fundraising campaign so that it can continue its activities beyond the December 2019 conclusion of the ICSU grant that has provided the bulk of the funds for its activities to this time.

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The LAAAMP Colloquium programme supports experienced advanced light source users and crystallographers to give presentations on the capabilities of advanced light sources and crystallography and to engage in discussions on how they can enhance researchers' investigations and offer career opportunities. LAAAMP (Lightsources for Africa, the Americas, Asia and Middle East Project) is a Joint Programme of the International Union of Pure and Applied Physics and the International Union of Crystallography, supported by the International Council for Science through its ICSU Grants Programme.