



# The Africa Light Source AfLS2020

Virtual Event : 18-20 Nov 2020



## AfLS – A powerful Boost

1. AfLS History : 2 decades → **AfLS → IAC, LoS / MoU, CDR**
2. Reminder – Media
  1. AfLS Website <http://africanlightsource.org>
  2. AfLS2020 <http://afls2020.africanlightsource.org>
3. Science
4. Perspectives
5. Upcoming

World Scientific  
Connecting Great Minds

Subject ▾ Journals Books E-Products Partner With

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Modern Physics Letters A | Vol. 33, No. 09, 1830003 (2018)  
| Brief Review [No Access](#)

**Synchrotron light sources in developing countries**  
Sekazi K. Mtingwa and Herman Winick

<https://www.worldscientific.com/doi/abs/10.1142/S0217732318300033>

The African Review of Physics (2018) **13**: 0019

**Proceedings of the first African Conference on Fundamental Physics and Applications 2018, Namibia.**  
Guest Editors: K. A. Assamagan, M. Backes, D. Charlton, S. Muanza, D. Sahu, and D. Singh

**The African Light Source Project**

<http://lamp.ictp.it/index.php/aphysrev/article/view/1610/586>

Biophysical Reviews  
pp 1–9 | [Cite as](#)

**Towards an African Light Source**

Authors [Authors and affiliations](#)



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Visit us at : <http://www.africanlightsource.org>



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## Socio-economic benefits

- Boost African Scientific Research, Research Capacity (Continent, regions, Institutes), Capacity Building - African Science Renaissance
- Global Research Community
- Tackling Diseases (Malaria, TB, Aids, Ebola ....)
- Unique African Research Opportunities attracting international collaboration : Energy opportunities, African Environment, Cradle of Humankind, Cradle of Culture, Mineral beneficiation, Agriculture.
- Mobility, Conferences, Schools, International Mentoring partnerships in student training, Regional Centres of Excellence, Local feeder instrumentation
- Build Research capacity in Industry, competitive industry
- **Science for Peace (eg CERN, SESAME)**
- **Return of the African Science Diaspora - new opportunities for young excellent scientists**
- **For African countries to take control of their destinies and become major players in the international community**



## Part of our Aim A wealthy advanced Africa

**Africa** has 1.2 billion people  
169 scientists per million people (UNESCO Science Report 2015)

**Italy** : 2600/million

**Germany** : 7600/million

**Africa** needs at least .....

**1 000 000 scientists**

to get 1/6 of <1<sup>st</sup> world>





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## Top Down .... and Bottom up ....

Vodafone GH

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### Ghana to champion African Light Source – Akufo-Addo

2 days ago General News Leave a comment



Ghana will champion the African Light Source (AfLS) to make it an official project of the African Union (AU) and ECOWAS, President Nana Addo Dankwa Akufo-Addo, has said.

President Akufo-Addo made the disclosure on Tuesday, in a speech read on his behalf at the opening of





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## Top Down .... and Bottom up ....

### AfLS : Plenary Session at COREVIP 2019

The AfLS was endorsed in a Conference Resolution  
Proceeding to develop MoU for Formal Collaboration



CONFERENCE OF RECTORS, VICE-CHANCELLORS  
AND PRESIDENTS OF AFRICAN UNIVERSITIES

(COREVIP) 2019

8 - 11 July, 2019

Al-Azhar University, Cairo, Egypt



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## Top Down .... and Bottom up ....

**AfLS at the AU : Jan 2018**

### DECISION ON THE REPORTS OF THE SPECIALISED TECHNICAL COMMITTEES (STCs)

The Executive Council,

#### C. STC ON EDUCATION, SCIENCE AND TECHNOLOGY

21. CALLS UPON Member States to support the Pan-African Synchrotron Initiative;







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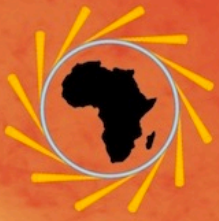


## Letters of Support - MoUs - MoAs



See Friday Programme





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## International Advisory Committee



See Friday Programme

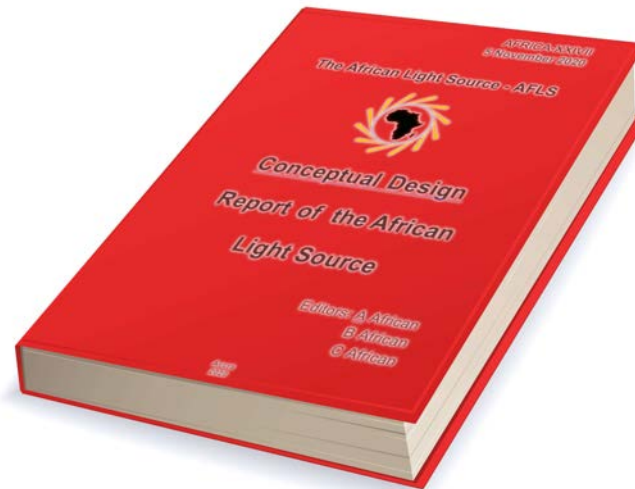


# The Africa Light Source AfLS2020

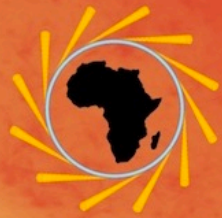
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## Conceptual Design Report



See Wednesday Programme



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## Partners on the AfLS Roadmap

**X-TechLab**

Accueil À Propos Formations Services Sèmè City Actualités Contactez-Nous

FORMATIONS SESSIONS I & II

**13 au 24 Mai 2019**  
**18 au 30 Novembre 2019**

PLUS D'INFO

SUIVRE NOS **Actualités**

DÉCOUVRIR NOTRE **Formation**

SOUMETTRE VOTRE **Projet**

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See Thursday  
Programme





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## African Light Source Based Science

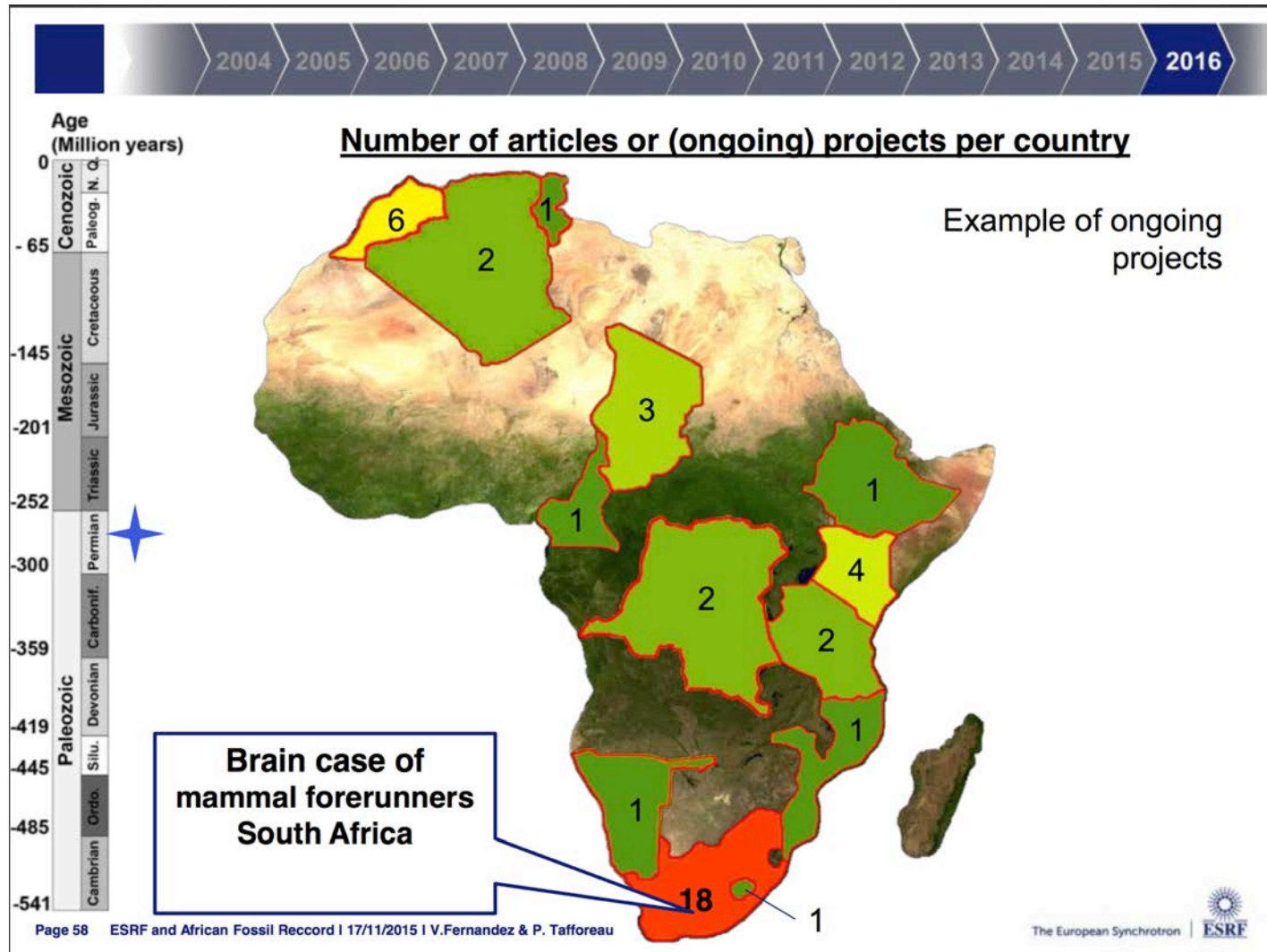
### 4 examples at this Conference

1. Energy Materials - Prof Diale (Today)
2. Environment - Prof Berhe (Today)
3. Paleo Science - Dr Kudakwashe (Today)
4. Bio Science - Dr Moyo (Friday)



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Virtual Event : 18-20 Nov 2020





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Virtual Event : 18-20 Nov 2020



## Bio Science : Feeder facilities

### Ghana

University of Ghana

### Zambia

The University of Zambia

### Algeria

Ecole Nationale Polytechnique de Constantine

### Nigeria

Federal University of Technology, Akure

University Ile-Ife

### Burkina Faso

Institute of Research in Health Sciences, Burkina Faso

### Morocco

University Sidi Mohamed Ben Abdellah

### Ivory Coast

Universite Felix Houphouet Boigny

### Egypt

Helwan University, Ain Shams University

### Lesotho

National University of Lesotho

### Ethiopia

Addis Ababa University







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## Example motivation based on Bio Science

- Structural information helps to elucidate function, the mechanisms of enzymes → inspires the design of new drugs.
- Africa should lead research of this nature → cures for diseases of particular relevance to Africa
- Synchrotrons are extremely important facilities for the imaging of bio-molecules.
- Development of 210 new drugs that depended on protein structural information [[Westbrook et al. 2019](#)].
- Development of drugs for treating HIV-AIDS, [[Wlodawer et al. 1998](#)].
- Listing of about drugs, their targets “*Practical Fragments*” Website [[Prac. Frag 2018](#)].
- Development of new treatments for tuberculosis [[Blundell 2017a](#)].
- Interplay between academia and industry [[Blundell 2017b](#)].
- **See Light Sources for vaccine development for the current Pandemic [[AfLS web page](#)]**



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Virtual Event : 18-20 Nov 2020



## Materials : Feeder facilities

### 1. South Africa

- Aaron Klug Centre, UCT, [link](#),  
U Witwatersrand, U Free State,  
U Stellenbosch, iThemba

### 2. Benin, X-TechLab, Benin, [link](#)

### 3. Ghana, U Ghana, [link](#)

### 4. Côte d'Ivoire, LaCPM, Universite Felix Houphouet Boigny, Abidjan, [link](#)

### 5. Senegal, Ziguinchor, [link](#)

### 6. Cameroon, Dschang, [link](#)

### 7. Kenya, Kenyatta University, [link](#)

### 8. Tunisia

- Monastir, [link](#), Nabuel, Tunisia, [link](#)

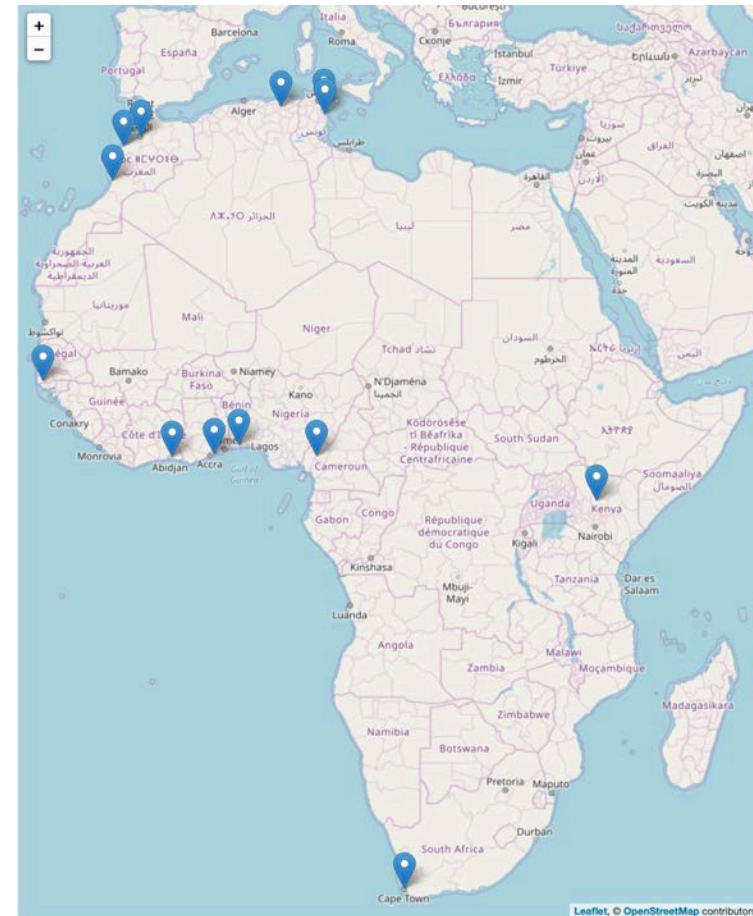
### 9. Algeria, Constantine 1, [link](#)

### 10. Morocco

- U Rabat,, [link](#), El Jadida, Morocco, [link](#) ,  
Agidir, Morocco, [link](#)

Significant  
facilities

IUCr  
OpenLab  
venues  
with  
facilities



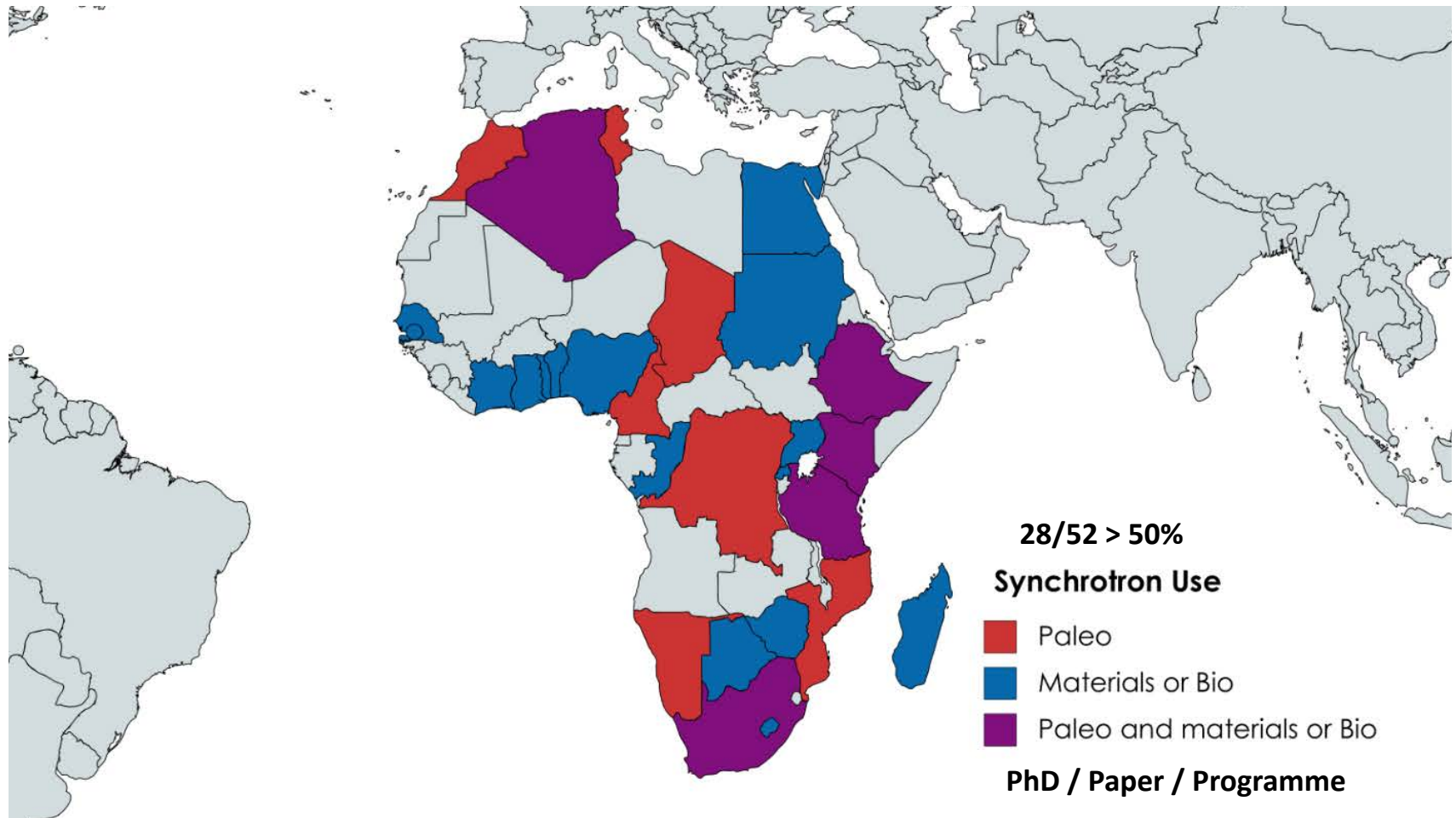


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Virtual Event : 18-20 Nov 2020



## African Footprint







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## 3rd African Synchrotron Light Source Conference AfLS3 : towards a brighter future



Kigali-Rwanda

Now 3<sup>rd</sup> week November 2021

