REGISTER NOW !

X-ray imaging theory & practice

Hands-on experience with the use of microtomograph

Hands-on experience with the use of programming and numeric computing platforms MATLAB & COMSOL

2023 X-TechLab
2nd Training session

An Intensive Introductory Course in Material Sciences & X-ray Imaging

November 20th - 30th , 2023

Register until October 26, 2023

Learn more forms.gle/CFrjLHeBkR5NUrSaA

SÈMÈ CITY

X-TechLab
Bright solutions for Africa

A unique regional training initiative

Advance your knowledge in Material Sciences & X-ray Imaging by attending the 2023 X-TechLab training session that will be held in Cotonou from November 20th to 30th.

The X-TechLab training session aims to endow the local and regional scientific communities with technical skills that will allow them to use X-ray techniques as tools for solving various problems in their specific fields

SKILLS YOU WILL ACQUIRE

The training session will focus on **Material Sciences** & **X-ray Imaging**. At the end of the training, you will acquire specific skills to

- Describe the principle of X-ray interaction with matter ;
- Describe the methodology for acquiring a tomographic image ;
- Describe the operating of an X-ray microtomograph ;
- Develop and implement a data collection strategy using an X-ray microtomograph ;
- Implement at least one tomographic reconstruction method ;
- Use COMSOL software for numerical simulation purposes ;
- Determine material behavior laws that are necessary to carry out a digital simulation ;
- Explain the main thermal and mechanical characterization techniques of materials as well as the information they provide ;

WHAT YOU WILL LEARN

NB : *The training courses require some mathematical background and some knowledge in programming and numerical simulation. Therefore, it is highly recommended that learners revise some mathematical notions (vectors, tensors, Fourier transform, Probability and statistics) and basic notions in programming and numerical simulation using MATLAB and COMSOL prior to the training session. Some tutorials on MATLAB and COMSOL for beginners are available on YouTube*

For more information and to apply visit : **forms.gle/CFrjLHeBkR5NUrSaA**

Material Sciences & X-ray Imaging	
Module I	**Mathematical refresher:** Reminder about vectors, tensors, Fourier transform, Probability, and statistics
Module II	**Image correlation methods:** General principles of image correlation, Correlation of tomographic images, Case study (Digital Volume Correlation), …
Module III	**Hands-on experience:** Sample preparation, experimental tests, hands-on experience with the use of MATLAB, industrial issues & X-ray tomography applications, …
Module IV	**Continuum mechanics:** Homogeneous materials, Damage, and fracture mechanics
Module V	**Thermophysical characterizations and analyzes:** Heat conduction, Thermal properties measurements, hands-on experience with the use of COMSOL, sustainable construction, fibers & polymers
Module VI	**Case study :** Quantum Electronics, Nanoelectronics and Nanotechnology, Synthesis of special materials in extreme conditions, …

WHO CAN APPLY

➔ Be an engineer or hold a Master degree (or being at Master 1 or 2 level) in fundamentals and applied sciences: Material sciences, Physics, Applied mathematics, etc.

➔ Hold a project on the development/characterization of materials for applications in construction and public works, transport, packaging, …

HOW IT WORKS

The training is an intensive course over two (02) weeks. The particularity lies in the association in equal parts between theory and practice with the opportunity for attendees to work on their own samples. All learners and lecturers will be present in person at Sèmè City in Cotonou. At the end of the training, the learners will undergo a test intended to assess the knowledge gained from the training for each participant. Some of the courses will be taught in French.

APPLY NOW !

Applications are submitted here :
forms.gle/CFrjLHeBkR5NUrSaA

COURSE FEES

The overall cost of the training is 3,200 euros per learner. However, Sèmè City has subsidized the 2023 training session. The French Embassy in Benin also offers some grants to support learner's mobility. Only the registration fee of 80 euros (52,600 FCFA) will be charged for Beninese candidates and 160 euros (105,100 FCFA) will be charged for candidates from other nationalities.

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Bright Solutions
for Africa

X-TechLab provides scientific communities from Benin and Africa with the necessary skills to use X-ray techniques as tools for solving specific and critical socioeconomic issues related to sustainable development in Africa

For more information visit : **www.xtechlab.co**

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AU BÉNIN

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Fraternité*

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