

**REGISTER
NOW!**

X-ray Imaging: From theory
to hands-on experience with microtomography,
MATLAB, COMSOL, and open-source tools for tomographic
image visualization and analysis

2025 X-TechLab Training Session

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

From November 17th to 28th 2025

Register until September 07th 2025

<https://forms.office.com/r/uLpVgY4ITM>

AN UNIQUE REGIONAL TRAINING INITIATIVE

Advance your knowledge in Material Sciences & X-ray Imaging by attending the 2025 X-TechLab training session that will be held in Cotonou from November 17th to 28th.

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 be focused on Material Sciences & X-ray Imaging. At the end of the training, you will be able to:

- > Explain the principles of X-ray interaction with matter ;
- > Operate an X-ray microtomograph for data acquisition ;
- > Implement at least one tomographic image reconstruction method ;
- > Process and analyze microtomography data for material characterization ;
- > Use COMSOL and MATLAB software for numerical modeling and simulations ;
- > Identify material behavior laws required for digital simulations ;
- > Describe the main thermal and mechanical characterization techniques of materials as well as the information they provide.



WHAT YOU WILL LEARN

The training will be delivered in French, with supporting materials available in English. Our bilingual experts will ensure that both French and English speakers can fully participate. Below is the detailed program of activities:

Day 1	Mathematical Elements for Tomography
Day 2	Introduction to Mathematical Morphology
Day 3	Continuum Mechanics
Day 4	Thermophysical Characterization and Analysis
Day 5	Composite Materials
Day 6	Correlation of Tomographic Image
Day 7	Sample Preparation and Tomographic Images Acquisition
Day 8	Implementing Image Correlation Using MATLAB
Day 9	Introduction to Open-Source Tools for Tomographic Image Visualization and Analysis
Day 10	Tomography Applications and Review of Training Outcomes

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.

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 ;
- > 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 knowledge test intended to assess the knowledge gained from the training for each participant.

APPLY NOW!

Applications are submitted here:

<https://forms.office.com/r/uLpVgY4ITM>



COURSE FEES

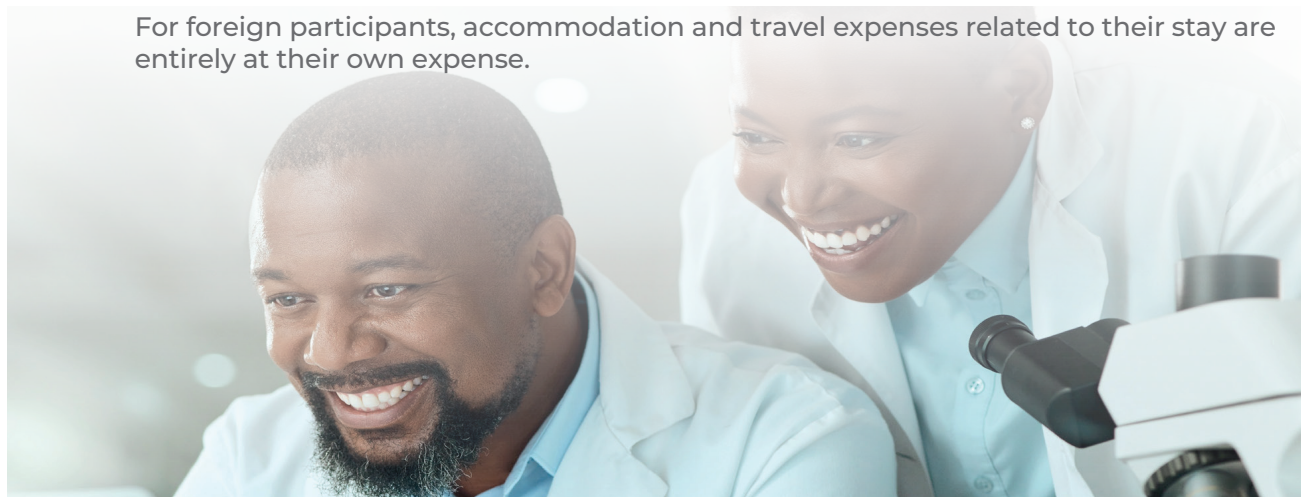
The overall cost of the training is 3,200 euros per participant. However, Sèmè City has subsidized the 2025 training session. As a result, only a registration fee of 80 euros (52,600 FCFA) will be charged for Beninese candidates, and 160 euros (105,100 FCFA) for candidates of other nationalities.



ACCOMMODATION AND TRAVEL EXPENSES

For Beninese participants residing more than 30 km from the training venue, accommodation expenses may be covered by the Agency.

For foreign participants, accommodation and travel expenses related to their stay are entirely at their own expense.



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, particularly in the health, agriculture, energy and environment sectors.

For more information visit: www.xtechlab.co