



## Postdoctoral Position (18 months)

### Graph Neural Networks for Smart Monitoring of Bio-based Composites (GRINCOMP MIAI Project)

Campus Technolac - Chambéry, France – 2026/2027

#### About the position

We invite applications for a **Postdoctoral Researcher position (18 months)** within the *GRINCOMP* project (*Graph-based Intelligence for Natural-fiber Composites*).

The project aims to develop **advanced AI methods based on Graph Neural Networks (GNNs)** for the monitoring and predictive maintenance of **bio-based composite structures**. These materials, combining natural fibers and thermoplastic matrices, exhibit complex behaviors under coupled environmental and mechanical stresses.

The research will focus on modeling **multi-sensor and multi-physics data** (temperature, humidity, mechanical strain, electrical signals) using graph-based representations. The developed models will support tasks such as **state estimation, anomaly detection, and remaining useful life prediction**.

The project contributes to the development of **sustainable, intelligent materials** for future energy systems.

The position is part of a collaboration between several French research laboratories:

- LISTIC (Computer Science, AI, signal processing) → LISTIC has expertise in statistical and deep machine learning, graph-neural-networks and on ambient intelligence and IoT-driven measurement systems. This expertise is directly transferable to modeling interactions between sensors, materials, and environmental factors.
- SYMME (Materials science, smart composite structures) → SYMME has significant expertise in the modeling and implementation of technical composite structures and recognized expertise in the field of smart composite structures incorporating piezoelectric materials.

#### Research Field

- Computer Science – Artificial Intelligence
- Machine Learning / Graph Neural Networks
- Signal Processing / Data Science
- Composite Materials, bio-based composit

#### Research scope

The successful candidate will design and develop advanced machine learning models to analyze **multi-sensor, multi-physics data** collected from instrumented composite materials.

Main objectives include:

- Designing **graph-based representations** of sensor networks embedded in materials



- Developing and training **Graph Neural Networks** for:
  - Internal state estimation (temperature, humidity)
  - Anomaly and damage detection
  - Remaining Useful Life (RUL) prediction
- Working with real experimental datasets from instrumented composite structures

### Your profile

- PhD in **Machine Learning, Data Science, Applied Mathematics, or related fields**
- Strong experience in **deep learning** (experience with GNNs is a plus)
- Solid programming skills in **Python** (PyTorch, TensorFlow, PyG, etc.)
- Interest in interdisciplinary research and real-world applications

### Nice to have:

- Experience with sensor data, IoT, or physics-informed ML
- Background or interest in materials science or structural monitoring
- Time-series analysis / signal processing

### Benefits

- 18-month full-time research position
- Salary according to French public research standards
- Interdisciplinary research environment
- Opportunities for publications and collaborations
- Access to research infrastructure in order to generate new sets of data

### Research environment

You will work in a collaborative and interdisciplinary setting involving:

- **LISTIC laboratory** (AI, Machine Learning, Graphs, data science)
- **SYMME laboratory** (materials science, smart composites)
- Interactions with national academic and industrial partners

### Details

- **Duration:** 18 months
- **Location:** Campus Technolac - Chambéry - France
- **Start date:** End of 2026
- **Salary:** funded by MIAI Cluster (UGA) according to French public research standards

### How to apply

Please send to Jean-Yves Ramel and Yann Meyer [at] univ-smb.fr :

- Before end of June 2026
- CV + Cover letter describing your research interests
- Publication list (if applicable)