POST-DOCTORAL POSITION OFFER – 12 TO 18 MONTHS (2026-2027)

MULTI-SCALE MECHANICAL CHARACTERIZATION AND MODELING OF KNITTED TEXTILE REINFORCED MATERIALS FOR HEALTH AND SAFETY APPLICATIONS

Organizations	Laboratory of Applied Biomechanics / Aix-Marseille University / Amidex
Localization	Bd. P. Dramard, Faculté de Médecine secteur-Nord, 13916 Marseille cedex 20, France
Duration/ Salary	12 to18 months / 2600 à 3000 € (gross) per month (upon experience)
Starting period	June 2026
Keywords	Mechanical characterization; Finite Element modeling;
Collaborators	Frederic Turquier, Rohit Madke
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Host institution

The **Laboratory of Applied Biomechanics (LBA)** is a joint research unit of the Université Gustave Eiffel and Aix-Marseille Université, located within the Faculty of Medicine on the North Hospital-University Campus in Marseille. Its research program is based on the biomechanical modeling and simulation of the human body (Virtual Human) for health, sports, and safety applications. The LBA has gained international recognition and influence over the past decades (https://lba.univ-gustave-eiffel.fr/).

Scientific context

This postdoc research is part of the 3 year Excellence Chair program "**Innovative Materials for Human Body Applications**" funded by the A*Midex foundation and starting in 2025 (https://www.univ-amu.fr/fr/public/actualites/decouvrez-les-nouveaux-laureats-des-appels-projets-amidex-decembre-2024). 3 full time equivalent researchers have already joined the team. 2 more are to be recruited.

Objectives

The main postdoc objective is to characterize and model the mechanical behaviour of bare and matrix embedded knitted textiles at different scales (fabric-macro / pore-meso / yarn-micro – Figure 1) when subjected to quasi-static and dynamic loading conditions. Understanding how scales influence each other and how textiles impact the composite behavior are expected to orient the modelling approach and limit the number of constitutive equation parameters to be identified by inverse method.

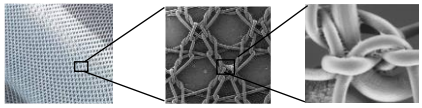

Figure 1 : Bare knitted textile at different scales

Beside, the postdoc will be expected to:

- co-supervise Master Research and PhD students,
- contribute to fundseeking,
- disseminate scientific findings : 1 article submitted and 1 podium presentation

Candidate profile: PhD in mechanics/biomechanics

- Solid theoretical foundation in continuum mechanics
- Skilled in material and structural experimental testing with Digital Image Correlation tool such as Vic3D/2D)
- Experienced in non-linear Finite Element numerical simulation such as ANSYS, LS Dyna, Altair
- Rigorous, autonomous, team player, analytical and critical thinking, strong written and oral ability
- Fluent in English (minimum C1)