

Post-Doctoral position

Electro-activated elastomeric plates: structure effect and application to soft actuation and energy harvesting

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The operating principle of electro-activated elastomeric plates is based on the following electromechanical coupling: a voltage is applied between two compliant electrodes sandwiching an elastic membrane, leading to its deformation. Currently these systems are extensively studied from the materials science point of view. In this project, we approach the problem under the structure aspect. Indeed links between mechanics and geometry must be reconsidered taking into account the reversible large strain electromechanical coupling of the system. This is essential for the intended applications of soft actuators and harvesting energy systems.

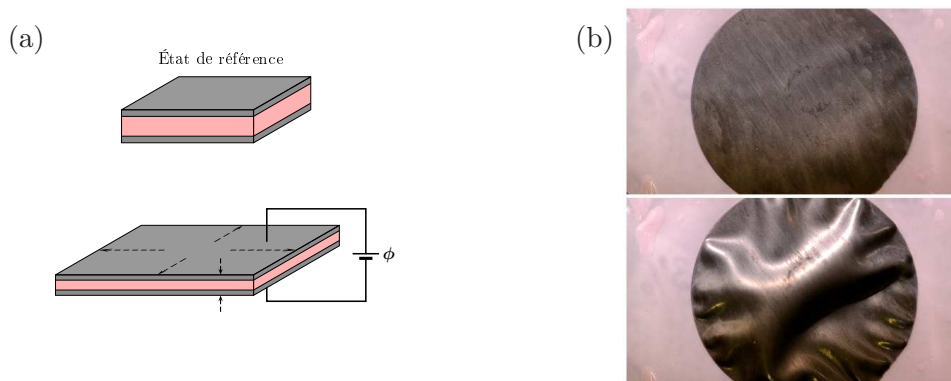


FIGURE – (a) Principle of electro-activated structures, (b) Preliminary experiments

This post-doctoral work will combine experiment and modelisation. The goal is to establish a process for electro-active systems fabrication on the one hand. On the other hand, a theoretical plate model will be developed for the electro-active structure. Modelisation will be compared to increasingly complex experiments by varying the membrane geometry, the boundary conditions, the pattern and nature of the electrodes.

The present offer is a one-year postdoctoral position funded by the LabEx LaSIPS. This postdoctoral work will mainly be conducted at UME (ENSTA-ParisTech), located one hour from the center of Paris. The project will involve close collaboration with two other laboratories of the LaSIPS: the PMMH (ESPCI) and E3S (Supélec). The candidate should hold a PhD in experimental or theoretical physics. She/he should have a strong background in theoretical solid mechanics, physics and coupled problems. The position is open immediately.

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