

Annex: Institute for Functional Intelligent Materials (I-FIM)

I-FIM will be the world's first institute dedicated to the design, synthesis, and application of Functional Intelligent Materials (FIMs). Its global vision is to create a platform to develop FIMs with predetermined properties and autonomous, dynamic functionalities which can respond to changing environmental conditions. I-FIM will then investigate the use of such materials for smart applications in various sectors of technology.

I-FIM's goals are:

1. Create a library of designer materials – as well as standardised recipes of their synthesis – and develop their minimal meaningful mathematical description (reduced representations), as the building blocks of FIMs.
2. Develop a formalism (based on physical and chemical models, biological and engineering principles, direct computation, and machine learning) and a materials robotic lab that allows the prediction of FIMs structure and synthesis pathways.
3. Devise novel smart applications based on such FIMs (neuromorphic computers, machine vision, smart membranes, smart catalysis, artificial tissue engineering, etc.).