

REPORT of the SEAB
on the creation of the Paris Saclay Institute of Nanosciences (PSiNano).

The Scientific and Educational Advisory Board (SEAB) is represented by Anna Fontcuberta-Morrall (Ecole Polytechnique Fédérale de Lausanne), Burkard Hillebrands (Technische Universität Kaiserslautern), Valérie Keller (Université de Strasbourg), Ralph Krupke (Technical University of Darmstadt), Marcel Mayor (University of Basel), Maria-Teresa Peracchia (Sanofi), Romain Quidant (École Polytechnique Fédérale de Zurich), Corinne Chanéac (Sorbonne Université, Paris). The project was presented and discussed with the SEAB on September 22th, 2021. After this meeting, the committee agrees to make the following comments and recommendations.

1. Is the project well positioned at the national and international levels?

The Paris Saclay area contributes with great achievements to the development and comprehension of nanoscale systems and science. Their activity to join forces for the education of the next generation of scientists is timely and perfectly able to compete with other institutions worldwide. The critical size of the Institute combined with the scientific excellence of its researchers will ensure an undeniable national and international influence and visibility for Université Paris Saclay in the field of nanoscience and nanotechnology.

2. What are the main strengths of the project?

- PSiNano project relies on the dynamism of the research teams of the previous Labex Nanosaclay, on the scientific excellence of the laboratories of Paris Saclay and on its important instrumental park, in particular its nanofabrication and characterization platforms. The labex has in the past shown its ability to federate research locally and to bring together highly original projects around new interdisciplinary collaborations. It is a major actor in the structuring of research in Paris Saclay and an important local catalyst for the emergence of new projects. The institute will be a real springboard for initiating and consolidating the foundation of new projects, both scientifically and technically risky, before applying for more challenging national or European calls. It will also be a support to launch the career of young researchers by helping them to build their project.

- PSiNano will benefit from the great diversity of master degree courses offered at Paris Saclay to build trans-disciplinary programs that will be a relevant pathway to prepare future PhD students. These initiatives will help prepare the next generation of researchers in nanosciences. They will also provide an excellent showcase for the attractiveness of international students.

- PSiNano project is based on a strong partnership with local companies and the growing economic activity in Paris-Saclay. It also integrates the strong potential for innovation and valorization through technology transfer. The strategy for creating start-ups was also a strong point of the Labex. The animation project proposed by the Institute will make it possible to bring together the entire ecosystem to support a strong industrial innovation policy.

- PSiNano project also relies on the very active science dissemination networks in Paris Saclay and on the deployment of scientific mediation tools previously developed by the Labex NanoSaclay.

- The project also proposes a reflection and prospection component (BrainStormNano) to identify breakthrough projects resolutely turned towards the future of research. The intention to bring students and scientists of different disciplines together at the very beginning to collectively identify and develop a joint target increases the likeliness of success by considering the potential and limitation of the different contributing disciplines from the very beginning. The presented concept is very ambitious, requiring mature, passionate and unselfish actors. But it is not only worth the effort but also the origin of real synergies. This aspect of the project is very ambitious, particularly innovative and forward looking in the construction of this new institute.

- The evolution of PSiNano towards a proactive policy on risks and toxicology is another strong point of the project. This initiative will enable a better understanding of this aspect of research, which is essential for the preparation of European projects in nanoscience.

3. What are the main weaknesses?

PSiNano project is very ambitious project that will require excellent management skills to reasonably distribute the limited amount of funding potentially available among the high number of promising proposals.

4. Does the project seem sustainable?

Experience shared by the PSiNano Institute's stakeholders will undoubtedly help in the execution and identification of deliverables. Moreover, the strong interactions of the Institute with its socio-economic environment will provide strong support for the realization of the actions outlined in the project.

5. What are the main issues you recommend considering for improvement?

Applicants might consider establishing/strengthening a mentoring system among scientists, especially across interdisciplinary boundaries, to help the good scientists become very good and to help the very good scientists become excellent. This could be particularly helpful, for example, with regard to high-level proposals such as ERC Starting Grant, Consolidator, and Advanced Grant Proposals.

Consideration should be given to increasing the attractiveness of international talent by setting up specific measures to be more competitive in the recruitment of doctoral and post-doctoral students

6. To the best of your ability to judge, does the project seem strategic for the University Paris-Saclay in terms of research, education and innovation? If not, what are your recommendations?

PSiNano project proposes a perfect strategic project to maintain and strengthen the excellent standing Paris Saclay has in nanoscale science and education.

In conclusion, P*Si*Nano project is founded on clear concepts and strategies on how to join forces around an activity based on a common tradition of collaboration on the Paris Saclay. Outstanding quality standard in the field of nanosciences and nanotechnology has been achieved and can be maintained in the structuring context proposed by the project. The inclusive activities of the network will allow all inhabitants of the Paris Saclay region to contribute with their own suggestions/initiatives. P*Si*Nano project is not only the renewal of Labex Nanosaclay but proposes new concepts and tools that will give new impulses to the scientific community, and also by aggregating new skills. It also presents an interesting reflection for the identification of future topics and to form a new generation of students open to interdisciplinarity, which is not yet the case in Paris Saclay.