



# Invent the future at **ESPCI ParisTech**



ECOLE SUPERIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLES  
DE LA VILLE DE PARIS



# Welcome to an exceptional environment for science

**ESPCI ParisTech is an original engineering grande école, an internationally renowned research centre and a fertile ground of innovation for industry. Every year, it educates top level engineers in three fields: physics, chemistry and biology.**

**The school is a founding member of Paris Sciences et Lettres and ParisTech.**

# “Make the choice of **ESPCI ParisTech!**”

Jean-François Joanny  
Director,  
ESPCI ParisTech



*“Choose science and research and join an exceptional scientific community of over 530 teachers and researchers, with 9 laboratories on campus.*

*You will walk in the footsteps of six Nobel prize-winners who did Research and taught at the school. You will be taught by the best specialists in physics, chemistry and biology and you can choose your own research fields. With more than one professor-researcher per student, ESPCI has the highest supervision ratio of all engineering schools in France.*

*ESPCI ParisTech has a unique teaching faculty based on an interdisciplinary approach and substantial interactions between teaching and research. Here, everything is brought together so that you can fully dedicate yourself to your passion for sciences, raising yourself to the highest level on the international stage.*

*ESPCI is located in the very heart of Paris, in the Latin quarter on a campus that covers over 30,000 m<sup>2</sup>. It will be entirely renovated over the coming years. Choosing ESPCI ParisTech means joining some 90 students in Promotion 134 who will invent the science of tomorrow and perhaps create start-ups based on their discoveries.*

*By joining our school of Nobel prize-winners, you will choose for yourself a life of passion and science.*

*Choose ESPCI today... we're waiting for you! ”*

## ESPCI PARISTECH IS:

**90** student-engineers per year

**1** patent per week

**1** scientific publication per day

**6** Nobel laureates



**30,000 m<sup>2</sup>** of teaching and research space

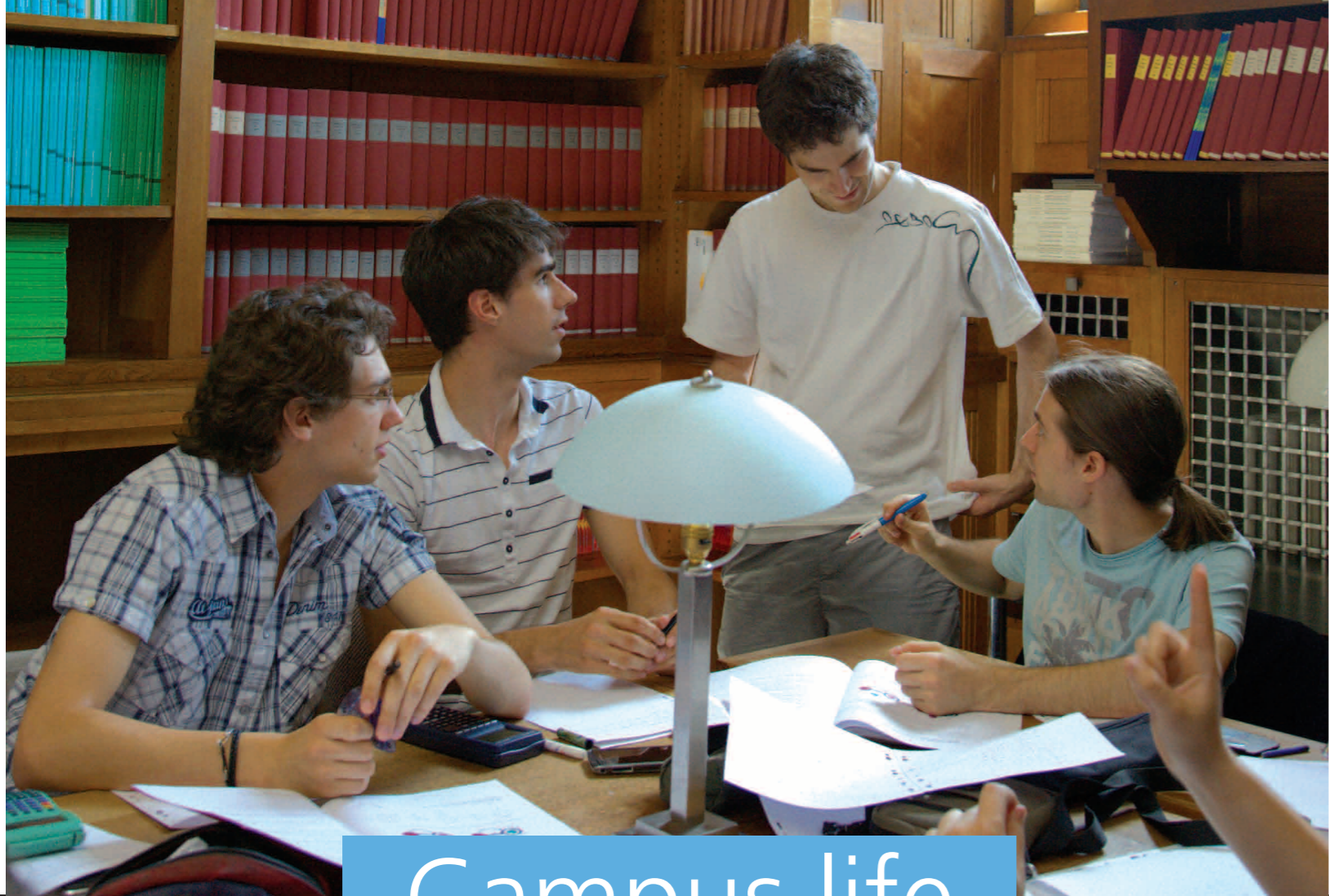
**9** mixed research units

**The leading** engineering school in the Shanghai Rankings

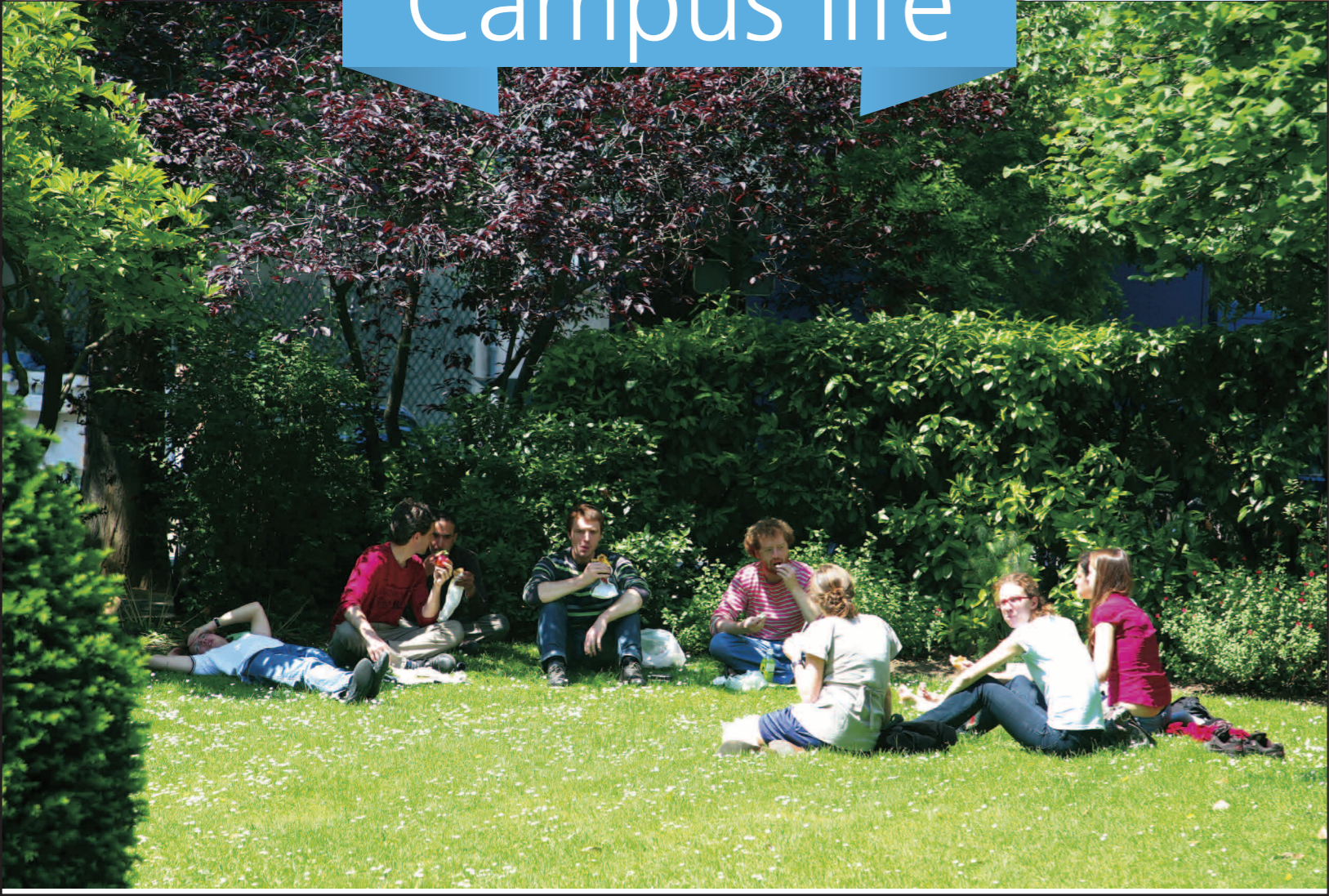
**530** researchers, teacher-researchers, post-doctors and PhD students

**3** start-ups created per year

AND SOON IT WILL BE YOU



# Campus life



**At ESPCI ParisTech, the small size of the yearly intake (90 student-engineers) is a real antidote to anonymity. Students enjoy a privileged environment. Cohesion, close bonds with previous graduates, teachers and researchers... This encourages development and excellence.**

## Life in the Latin Quarter

Since its creation in 1882, the Ecole Supérieure de Physique et de Chimie Industrielles has always been in the heart of Paris' 5th arrondissement, on rue Vauquelin. The school covers 30,000 square metres all of which are dedicated to teaching, pioneering research and technological innovation. Cohesion, close links with previous graduates, teachers and researchers... this encourages development and excellence.

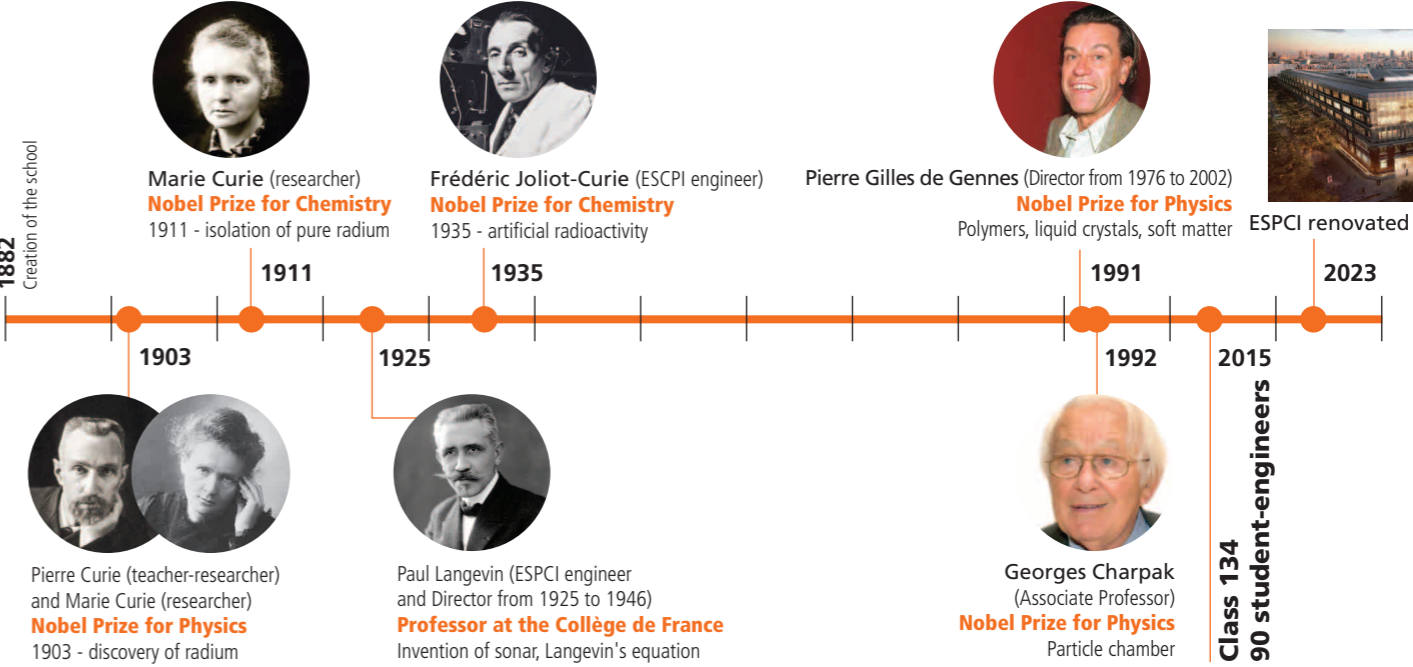
chemistry, biology of course but also medicine, computer science, human and social sciences. Within the 9 mixed research units (UMR / CNRS), ESPCI researchers work everyday with their counterparts from Ecole Normale Supérieure, Institut Curie, Collège de France, Ecole de Chimie de Paris, Ecole des Mines et de l'Observatoire de Paris (federated by the Paris Sciences et Lettres Research University alliance) and also with the Pierre et Marie Curie University, Paris Diderot University and INSERM.

**30,000 m<sup>2</sup>** dedicated to teaching, pioneering research and technological innovation

The school is an integral part of a scientific campus home to major Parisian research centres. On the Montagne Sainte-Geneviève and within a 500m radius, the density and variety of subjects studied are unique: physics,

Studying at ESPCI means accessing to a scientific campus and also being at the heart of an historic and cosmopolitan area: the Latin Quarter. It means being at the centre of Paris culture, a short walk from the Jardin du Luxembourg, the Saint-Geneviève Library as well as the grand museums of Paris, its art-house cinemas and historic theatres...

### Pioneers, designers and innovators since 1882



# Attractive and dynamic associations and clubs

ASSOCIATIONS AND CLUBS are a great way to bring students closer together, creating a strong bond of friendship. They also offer the opportunity to discover new things, share experiences and generate a good balance between academic studies and personal life.

Support plays a key role. Team sports (handball, football, basketball, rugby, etc.), individual sports (running, badminton, etc.), dance, astronomy, theatre, humanitarian and environmental charities, social entrepreneurship, Science, photography, art, music, prototyping... All these activities are available at specific times during the student-engineers' schedules.

Three teams manage the associations and clubs: the Bureau des élèves, the Bureau des sports and the Bureau des arts. It is up to students to be part of the various associations or to create a new club.

To connect with professional life, several structures encourage individual and group experimentation:

- The *Forum horizon chimie* brings together students and businesses,
- *Physique chimie avenir*, ESPCI ParisTech's Junior Enterprise, has been offering its services to companies for over three decades.
- The EPICS association (Public Exhibition of Scientific Inventions and Designs) involved a third of the school's student-engineers in 2014 and organised two exhibitions: "*Moi, chercheur et inventeur*" at the Palais de la Découverte and "*Inventeurs d'avenirs*" at the Cité des Sciences et de l'Industrie

## More activities thanks to PSL

Paris Sciences et Lettres (PSL) is injecting a new dynamic and encouraging exchanges with other establishments, in particular arts schools that train professionals in music, dance, dramatic arts, decorative arts and cinema. With over 14,000 students, PSL's partnership means we can reach the highest levels in very competitive sports events, thanks to a critical mass of participants that makes the most specialised activities feasible.



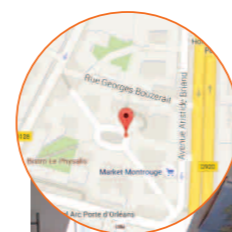
## Examples of the school's associations and clubs

- Bureau des Sports
- Physique-Chimie Avenir (PCA), the school's Junior Enterprise
- Forum Horizon Chimie, which brings students and businesses together, opening the door to internships
- Gala, which organises the prestigious gala event every year
- GRI (IT Managers - Gentils Responsables Informatiques)
- Theatre Club
- Art Club
- EPICS: the association which organises exhibitions
- Start'n go: seminars and conferences
- Cinema Club
- "PC coup d'pouce", the school's humanitarian charity
- Bekk, the school's booklet
- Club Q, the school's culture club
- 4L Trophy
- Cooking Club



# 3 university halls for students

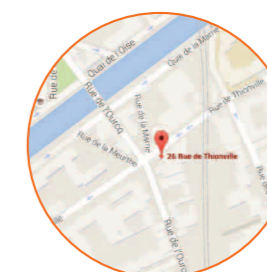
THESE HORIZONTAL BONDS are supported by a community of three halls of residence providing accommodation for students. The apartments, ranging from 18 to 35 m<sup>2</sup>, are single occupancy and fully furnished.



● **Porte d'Orléans** hall, known as "La Rêz", in Montrouge (7 rue Théophile Gautier), half an hour from the school, are the most popular.



● **Le Kléber** halls in Ivry-sur-Seine (44 Rue Raspail), direct to the school on metro line 7



● **Crous Thionville** halls in the 19th arrondissement (26 rue de Thionville), also on metro line 7

## An extended and renovated campus coming soon...

The construction of a completely renovated and larger campus will ensure ESPCI ParisTech to maintain an innovative international centre for research and multidisciplinary training: a 21st century campus open to the city and a symbol of Paris' scientific excellence. A further 10,000 square metres for an ambitious architectural project, a genuine urban campus adapted to the requirements of teachers and researchers, a future-proof structure celebrating science and innovation.





Be taught  
by the best

Teaching methods at ESPCI ParisTech are completely different from anywhere else, offering student-engineers wide perspectives.

# An original 3+1 teaching approach

**A**t ESPCI, the course covers four years. The two first years are interdisciplinary and provide, as the core curriculum, solid foundations in biology, chemistry, physics, maths, economics, computer science and languages. Practical work is very important.

Student-engineers choose a specialisation in their third year: physics, chemistry, physical chemistry or biotechnology. The third year begins with a six-months industrial internship, followed by four months of specialised lessons and a second two to three-month internship in a research laboratory. For the fourth year, students are offered a broad choice of studies, in France or overseas: Masters, specialised Masters, double degrees, applied technology schools (IFP School, INSTN), MSc, MRes...

Two out of three graduates continue their studies with a PhD which lasts three years and, for one out of five graduates, takes place overseas, at Princeton, MIT, Harvard or Cambridge, for example.

### AN ORIGINAL INTERDISCIPLINARY APPROACH

ESPCI teaching is based on an interdisciplinary approach. Our pure science courses have the broadest curriculum to be found. Students discover the rigour of physics and physical concepts, the complexity of biology and the originality of chemistry and its applications.

### A few figures

ESPCI is home to around **530 researchers**, teacher-researchers, post-docs and PhD students at its main site on rue Vauquelin. It has **9 mixed research units** in the following disciplines:

- Physics and materials studies
- Soft matter & chemistry
- Sciences and soft matter engineering
- Chemical biology innovation
- Neuroplasticity
- Biological & proteomic mass spectroscopy
- Gulliver
- Physics & mechanics of heterogeneous environments
- Langevin Institute "waves and images"

Annual average volume of industry contracts:

**11 million euros** (2011)

Consolidated budget: **57 million euros** (2011)



You will then choose the discipline with which you have the greatest affinity.

This interdisciplinary teaching approach is also supported by a clever balance between fundamental and practical approaches. Experimental teaching represents 50% of the teaching time. Here, facing each discipline as a reality and understanding through experience becomes a second nature. Student-engineers familiarise themselves with a broad range of technique, from the spectrometer to the chromatograph, from laser-optics to micro-fluidics.

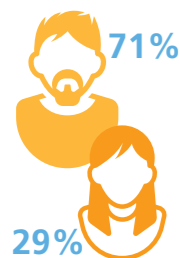
### PIONEERING TEACHING METHODS

ESPCI ParisTech's originality is also illustrated by its innovative teaching methods: Tutoring sessions. Student-engineers are educated through scientific research.

Beyond the physics-chemistry-biology interdisciplinary approach, teaching at ESPCI ParisTech provides student-engineers with the opportunity to drive their education through laboratory work and tutorials. This innovation, introduced by Pierre-Gilles de Gennes, encourages students to work in small groups on a subject chosen by a teacher-researcher and inspired by a research project. This initiative goes beyond the framework of the lecture concerned.



PROPORTION OF BOYS / GIRLS IN THE 133<sup>rd</sup> PROMOTION



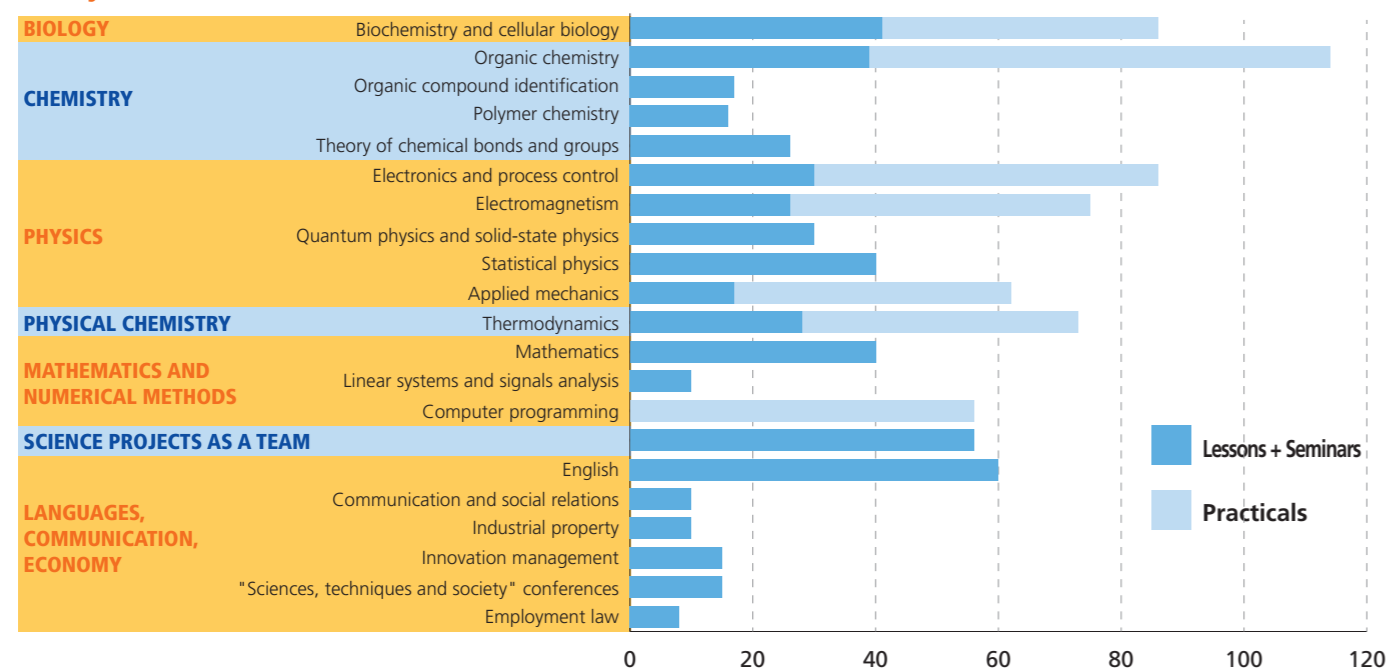
**TAILORED ACADEMIC SUPPORT**  
Because of the small size of the yearly student intake, each student-engineer can enjoy tailored academic support. Complementary teaching is given to student-engineers from parallel courses, in subjects where their initial studies were less advanced. Student-engineers will of course have the opportunity for productive discussions with the Academic Affairs as well as with their elders, to establish and enrich their professional paths.

**RESEARCH AT THE HEART OF TEACHING**  
ESPCI ParisTech has a history of breaking down barriers between chemistry, physics and biology and also between fundamental research and useful applications. The result is an exceptional scientific productivity. This is recognised by the Shanghai Ranking where ESPCI ParisTech is listed as the leading French engineering school. Another of the school's assets is the role of research. Teaching through research is gradually taking on a vital importance. ESPCI ParisTech is home to 9 pioneering research units, all associated with the CNRS, operating at

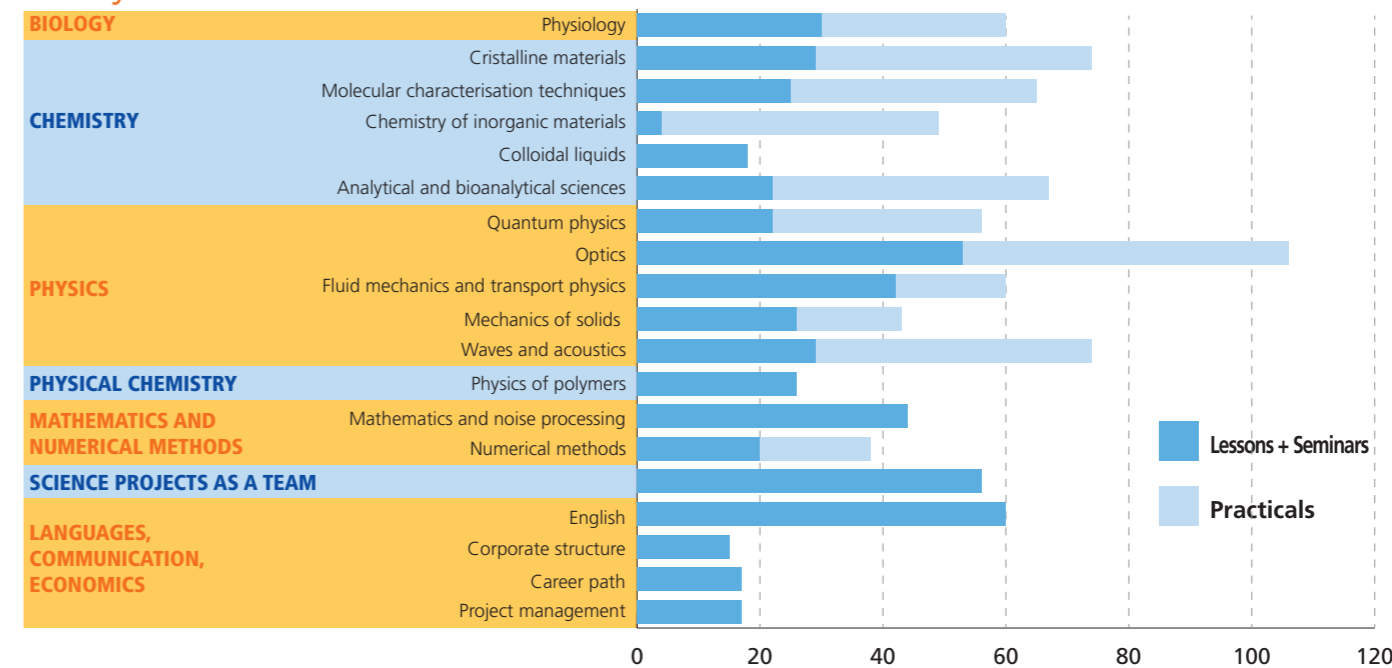
the frontiers of fundamental scientific knowledge and industrial applications. They cover a wide range of fields from polymers to telecommunications, from nano-bio-physics to organic synthesis, from environmental science to biomedical imagery, from neurobiology to microfluidics, from soft matter to quantum physics. ESPCI ParisTech researchers continuously anticipate industry requirements to invent as pioneers in their fields. They publish more than one article per day in the best international scientific peer-reviewed journals. This constant confrontation with industrial perspectives has generated a remarkable powerful entrepreneurial culture that makes technological innovation an essential lever for commercial success. Scientists at ESPCI ParisTech file one patent a week and every year create several start-ups to promote the inventions and discoveries generated by their research ●

## Breakdown of hours of lessons/ practical work per subject

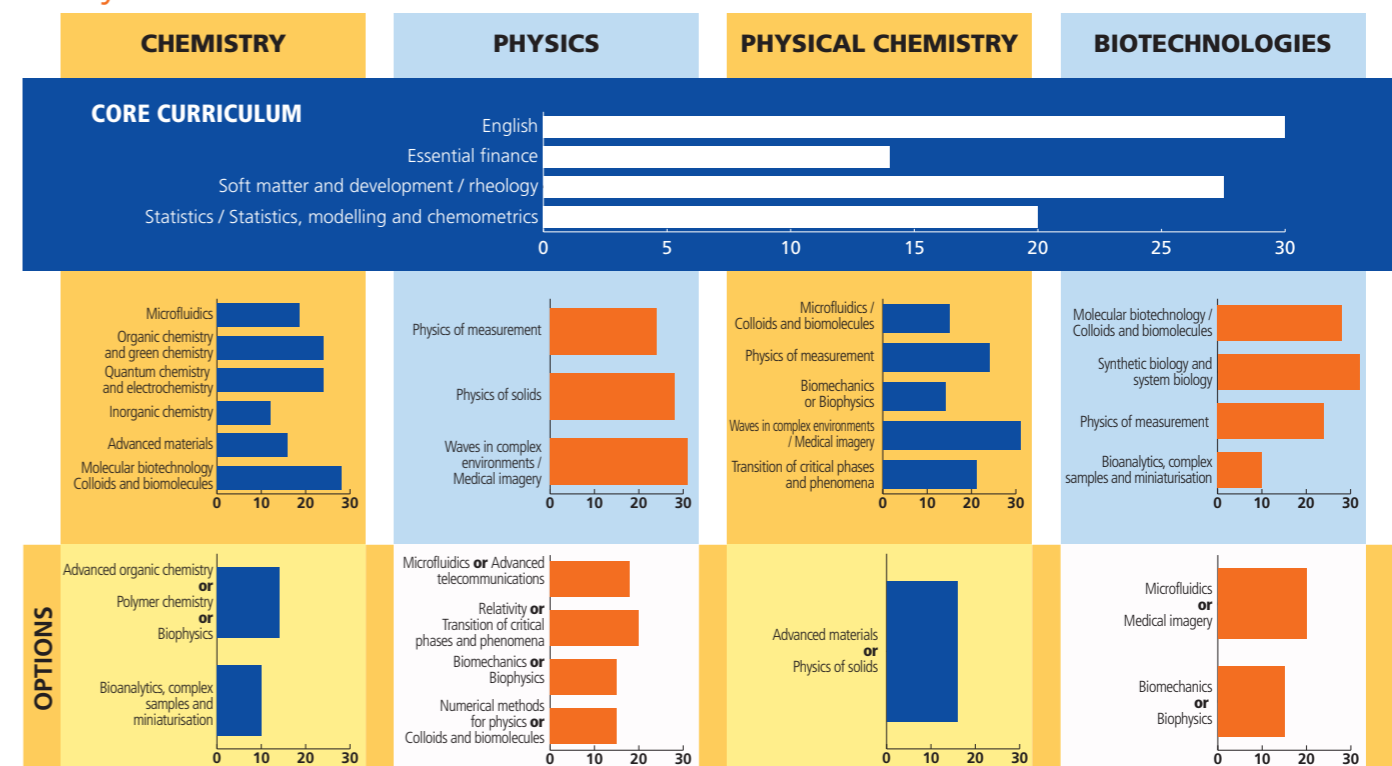
### 1st year



### 2nd year



### 3rd year



### 4th year

The choice is broad for the 4th year spent in France or overseas: Masters, specialised Masters, double degrees, applied technology schools. Two out of three graduates continue their studies with a PhD which lasts three years and, for one out of five graduates, takes place overseas, at Princeton, MIT, Harvard or Cambridge, for example.

# How to join ESPCI

## ADMISSION BY ENTRANCE EXAM

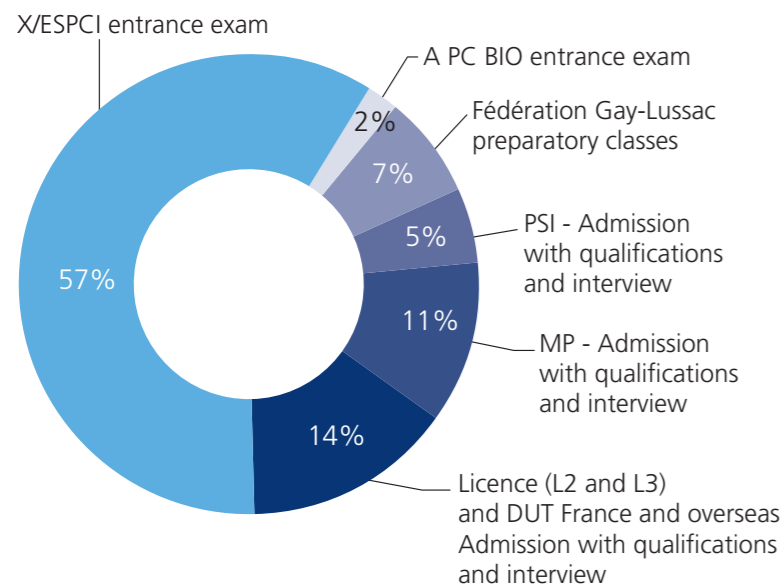
Two-thirds of ESPCI student-engineers are recruited by entrance exams at the end of the second year of grande école preparatory classes, PC courses (shared entrance exam with the École Polytechnique) and banking courses for written exams with the ENS. A few places are available through entrance exams for A PC BIO courses.

## ADMISSION BY QUALIFICATIONS

In addition to the traditional entrance exam and to broaden the playing field and horizons of the student-engineers, ESPCI ParisTech also recruits students on qualifications through a selection of students from preparatory classes at the Fédération Gay-Lussac and also other students, through admission via qualification. They present application file, do written

59 students recruited by exam and 37 by parallel admission  
14% of students come from overseas,  
4% have dual nationality

## Recruitment of student-engineers in 1st year



More than 1 in 3 student-engineers receives financial support

exams and have interviews. Several courses allow the school to welcome international students who enrich the yearly intakes with their different cultures and experiences.

## FINANCIAL ASSISTANCE

ESPCI ParisTech is committed to social openness and equality; it has created its own grant system. The Joliot Grants provide support for any student-engineer whose financial situation may hinder or interrupt his/her studies. For example, it can reduce the cost of accommodation for the student. The Joliot Grants are in addition to any financial support, including CROUS grants, and have a wider assessment basis than other grants. Today, over a third of our student-engineers receive regular financial support through this grant system, financed by the school and by tuition fees paid by those who do not receive grants. The ESPCI Association des Ingénieurs also promotes assistance and supports student-engineers through loans, advice, rent deposits, donations and much more.

## LANGUAGE

Since most courses are taught in French, we provide intensive language courses for international students, before the start of the school year.



# Job prospects: engineers for every industry

The two-fold interdisciplinary and research teaching approach makes ESPCI graduate engineers particularly competent in the field of innovation. While 20% of our graduates focus on academic research and teaching, 80% move towards industry in every sector.

ESPCI training provides student-engineers with the right reflexes to cross different approaches, explore interdisciplinary interfaces, transpose concepts and use their intuition to imagine new ways of doing and thinking. They are trained for technological invention and ground-breaking innovation. The school's reputation with the international scientific community as with multinationals directly benefits the student-engineers who have no difficulties in finding internships and research projects all over the world.

84% of graduates work in R&D  
1 out of 4 ESPCI engineers is based overseas  
60% choose to continue their education with a PhD

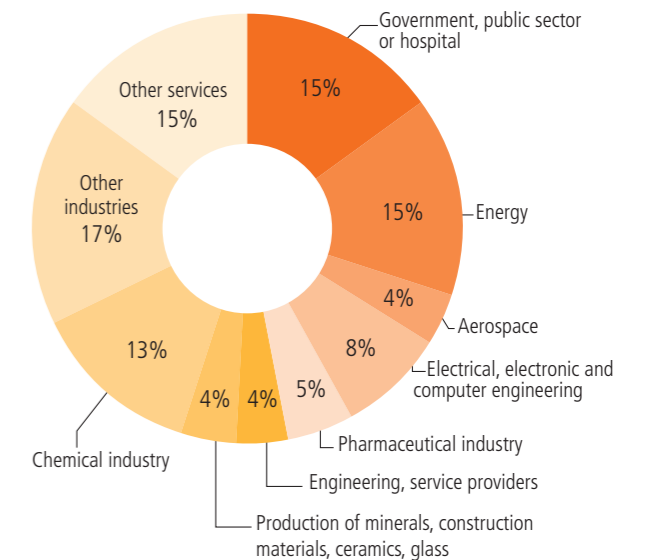
The more traditional teaching methods, like the six-month internship within a company, remain pillars of engineering education. Today, these long internships are often completed overseas. They give student-engineers in-depth knowledge of the professional world. ESPCI engineers are educated to be industry generalists.

## Sponsorship

Each year is sponsored by a company with a technological focus:

Arkema, Withings, Safran, Nestlé, Nexans, Lundbeck, Total, Michelin, Schlumberger, Areva, L'Oréal, Rhodia, Saint-Gobain, Thales.

## Careers of graduate engineers



The average gross annual salary of an ESPCI graduate is **43,450 euros**  
The average time between graduation and recruitment is **1 month**

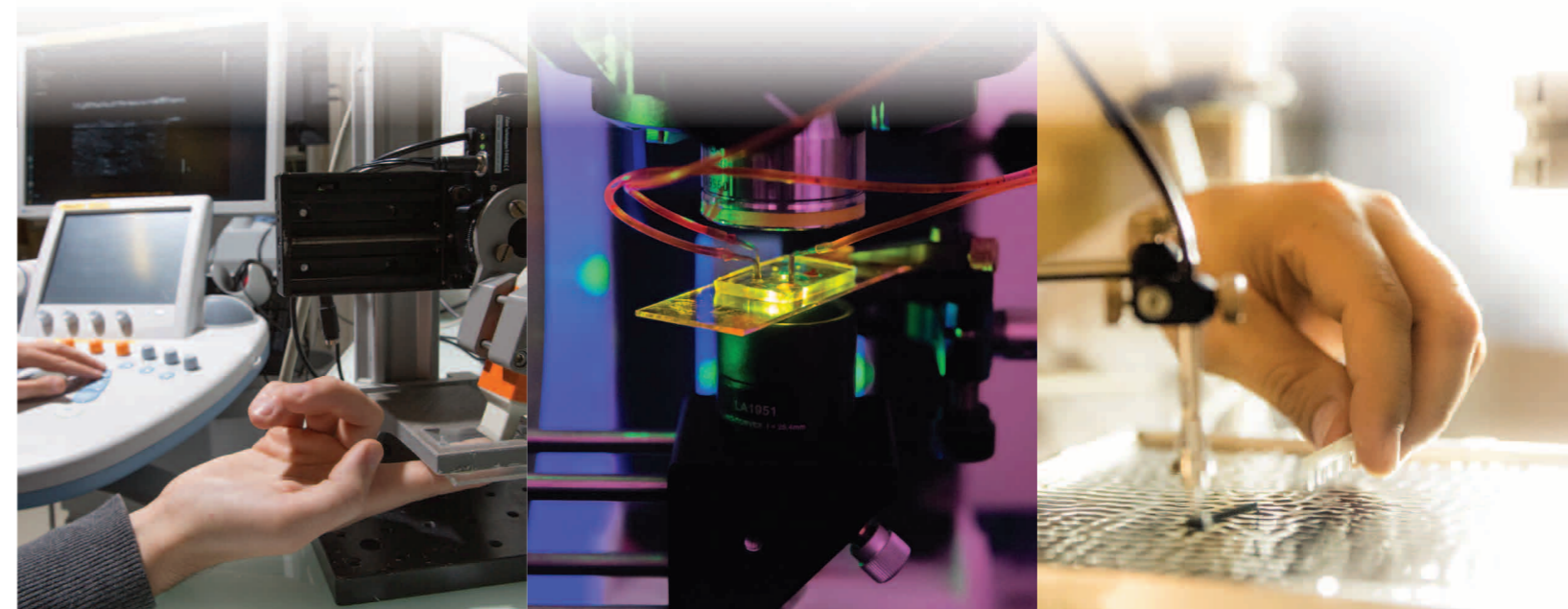
# International exchanges and double degrees for everyone

At the end of the curriculum, almost all students have had at least one experience abroad : Academic experience (20%), or an internship within a company (60%). Student-engineers can go anywhere in the world and are welcomed by the school's partners. With its international network of academic partners, ESPCI ParisTech offers its students many opportunities of double degrees and academic experience. Through the ParisTech network, ESPCI can participate in the Athens Programme (Advanced Technology High Education Network Socrates). During the third year, students can follow a one-week intensive course in one of the schools in the Athens international network. ESPCI is also involved in a hosting programme for Chinese, Brazilian, Russian, Columbian and other students. These students follow second and third year classes at ESPCI ParisTech and receive the school's diploma at the end of their time here.

## INDUSTRIAL INTERNSHIPS IN FRANCE AND OVERSEAS

The school's reputation with the international scientific community and in multinationals directly benefits the student-engineers who have the opportunity to do their internships and/or research projects all over the world. Student-engineers also have the possibility to do their 3rd year mandatory industrial internship overseas (6 months). On average, nearly two-thirds of students seize this opportunity •

	International double degrees	French double degrees	Student exchange agreements (with ECTS credits)	Links
<b>North America</b>				
MIT, Harvard, Stanford (United States)			x	
Northwestern University (United States)			x	
École polytechnique de Montréal (Canada)	x			
McGill University (Canada)			x	
<b>South America</b>				
Campina (Brazil)			x	
UFRJ (Brazil)			x	
UNAL (Colombia)			x	
<b>Asia</b>				
Hokkaido Kyo iku Daigaku (Hokkaido University, Japan)			x	
Doshisha University (Japan)	x			
Tongji University (China)	x			
Seoul National University (South Korea)	x			
<b>Europe</b>				
Imperial College London (United Kingdom)			x	
Cambridge University (United Kingdom)			x	
Novosibirsk University (Russia)	x			
ETH Zürich (Switzerland)			x	
Politechnika Warszawska (Poland)	x		x	
Technische Universität München (Germany)			x	
Universität Konstanz (Germany)			x	
Technische Universität Wien (Austria)				
Budapest University of Technology and Economics (Hungary)			x	
Norwegian University of Science and Technology (Norway)			x	
Czech Technical University in Prague (Czech Republic)			x	
KU Leuven (Belgium)			x	
Universidad Politecnica de Madrid (Spain)			x	
Politecnico di Milano (Italy)			x	
Instituto Superior Tecnico Lisboa (Portugal)			x	
Istanbul Technical University (Turkey)			x	
Universidad complutense de Madrid (Spain)			x	
Stockholm University (Sweden)			x	
Imperial college of science, technology and medicine (United Kingdom)			x	
Universidad polytechnica de catalunya (Spain)			x	
Universidad de Siena (Italy)			x	
Universidad de Bologna (Italy)			x	
Rwth Aachen University (Germany)			x	
<b>France</b>				
HEC Grande École		x		
ESSEC Grande École		x		
Sciences-Po Paris		x		
Ingénieur AgroParisTech		x		
Ingénieur de l'Institut d'optique Graduate School		x		
IFP School		x		
Institut national des sciences et techniques nucléaires (INSTN)		x		
Ecoles de ParisTech				x
Ecoles de PSL				x
Ecoles de Chimie de la Fédération de Gay-Lussac				x
Collège des Ingénieurs		x		



# ESPCI: generating innovation and jobs

ESPCI is also known for its capacity to encourage major innovations. Did you know that as well as radium, polonium, actinium and lutecium, many other objects from our everyday lives were first discovered or created at ESPCI, like the neon tube, the black box, the quartz watch, sonar, wireless technology, self-healing rubber or even ultrafast ultrasound imagery?

## AN ENTREPRENEURIAL CULTURE

More and more graduates create their own companies after graduation or after their PhD. This capacity to innovation is highly valued today. ESPCI courses

perpetuate this strong innovation culture which stems from the people who have worked at the school, like Paul Langevin, theoretical physicist and the inventor of sonar, Pierre and Marie Curie and our contemporaries Pierre-Gilles de Gennes and Georges Charpak. Their heritage encourages students to contribute

Over 60 innovative high-tech companies have been created at ESPCI since the beginning of the 1990s.

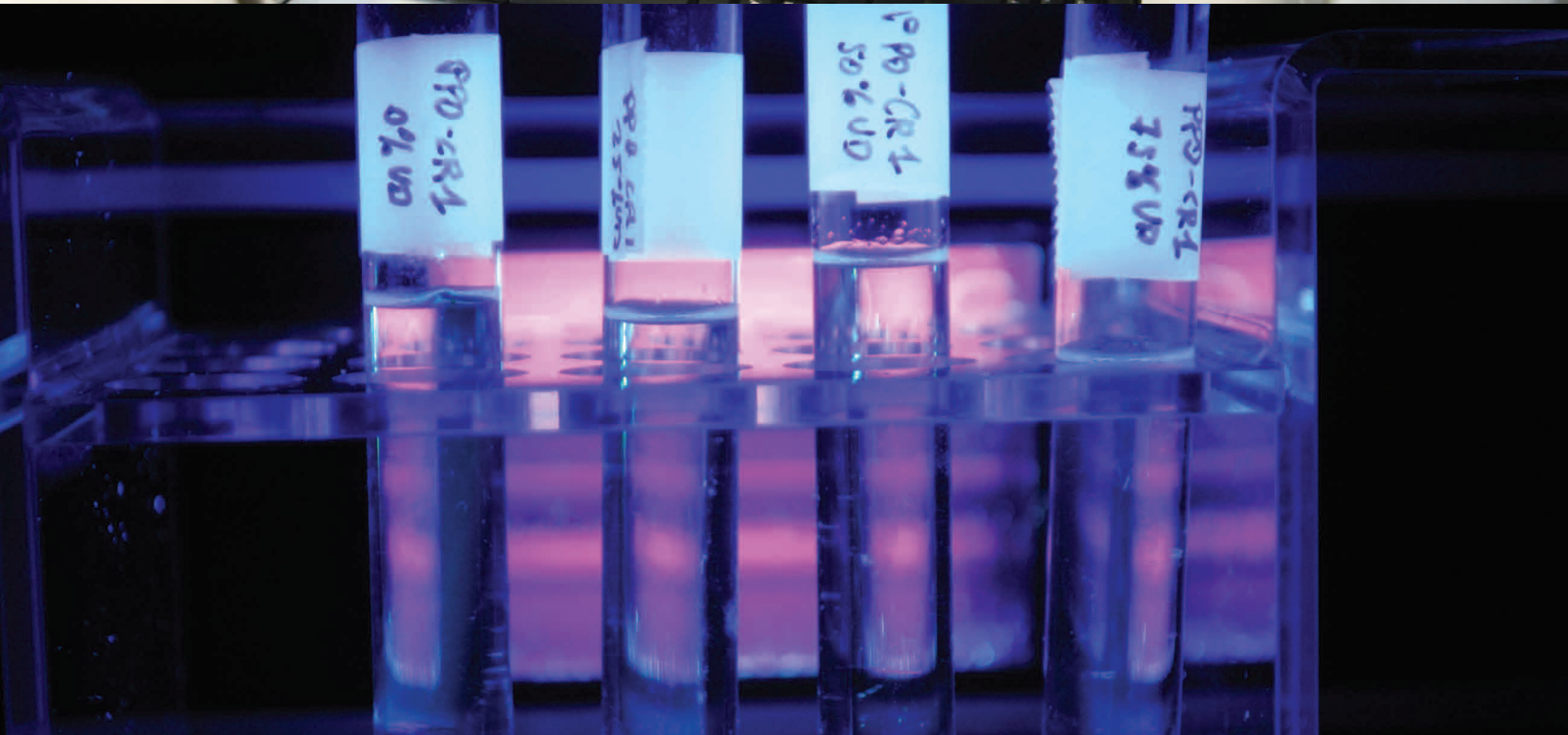
## ESPCI and its start-ups

- An average of three start-ups are created every year in every high-tech field: medical imagery, therapy, telecommunications, intelligent materials, sustainable materials, etc. Some of these start-ups that generate highly qualified jobs have the potential of revolutionising entire sections of French and even international industries.
- Consolidated sales of start-ups created over the last 10 years: 1.5 billion euros

- **Fluigent** (2008)
- **Cytooo** (2009)
- **Sculpteo** (2010)
- **Withings** (2010)
- **Invoxia** (2011)
- **Winovel** (2012)
- **Capital Innovation Partners** (2012)
- **Inventel**
- **Cy-Play**
- **Finsécur**
- **TR Com** (2009)
- **SuperSonic Imagine**
- **Sensitive Object Echosens**
- **LLTech** (2010)
- **RainDance Technologies** (2008)
- **Capsum** (2010)
- **Ademtech Ulifetec** (2012)
- **CDP Innovation** (2008)
- **Acanthe Biotech Nexdot**
- **SmartView** (2011)
- **Vision Objects**
- **Platod** (2012)
- **EOS Imaging** (2000)
- **HiFiBio** (2013)
- **Biomillenia** (2014)
- **Microfactory** (2014)
- **Milidrop** (2015)
- **Cardiawave** (2015)

to future technological progress through their knowledge and their innovations. ESPCI ParisTech researchers continuously anticipate industry requirements to invent viable solutions as pioneers in their fields. They challenge nature and materials through concrete situations inspired by industry issues. They publish more than an article a day in the best international scientific peer-reviewed journals. This ceaseless confrontation with industrial perspectives has generated a remarkably powerful entrepreneurial culture that makes technological innovation an essential lever for commercial success. Scientists at ESPCI ParisTech file one patent a week and every year create several start-ups to promote inventions and discoveries generated by their research •





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