ISIS - Institut de science et d'ingénierie supramoléculaires

Rapport Hcéres

agence d'évaluation de la recherche
et de l'enseignement supérieur

Research Units Department

AERES report on unit:

Institut de Science et d'Ingénierie Supramoléculaires

ISIS UMR 7006

Under the supervision of the following institutions and research bodies:

Université de Strasbourg

CNRS

January 2012

agence d'évaluation de la recherche
et de l'enseignement supérieur

Research Units Department

President of AERES

Didier Houssin

Research Units Department

Department Head

Pierre Glaudes

Unit

Name of unit:	Institut de Science et d'ingénierie supramoléculaires
Acronym of unit:	ISIS
Label requested:	UMR
Present no.:	7006
Name of Director (2009-2012):	Mr Thomas EBBESEN
Name of project leader (2013-2017):	Mr Paolo SAMORI

Members of the committee of experts

Chair: Mr David REINHOUDT, Twente, Netherlands

Experts:

Ms Chantal ANDRAUD, Lyon (representative of CoNRS)

Mr Yong CHEN, Paris

Mr Gérard JAOUEN, Paris (representative of CNU)

Mr Markus KALESSE, Hannover, Germany

Mr Richard LAVERY, Lyon

Mr Clemens RICHERT, Stuttgart, Germany

Ms Isabelle ROBERT-PHILIP, Marcoussis

Representatives present during the visit

Scientific Delegate representing AERES:

Ms Gilberte CHAMBAUD

Representative(s) of the unit's supervising institutions and bodies:

Mr Jean Pierre MUNCH, Université de Strasbourg

Mr Jacques MADDALUNO, INC, CNRS

Report

1 • Introduction

Date and conduct of visit:

The committee members have analysed, prior to the visit, the written document elaborated by the present director and the future director. The visit was conducted January 5th and 6th 2012, in the building of the 'Institut de Science et Ingénierie Supramoléculaires' according to an agenda jointly defined by the director and the President of the committee.

On January 5th the director presented the organisation of ISIS and its results in terms of finance, formation and recruitments. The global project of ISIS was then presented by the future director who starts his mandate immediately after the AERES visit. The scientific presentations of the results and the projects of each group were presented by the Principal Investigators (PI) on both days of the visit. A visit of some laboratories facilities has been organised and the committee could meet the representatives of the researchers, of the assistant-professors, of the engineers and administratives and of the PhD students and post-docs. The committee could discuss with the institutions in charged of ISIS (UdS and CNRS) about their respective supports provided to the unit.

During the visit, the committee had also a presentation of the federative project for a technical platform common to the 3 chemistry laboratories located at the campus Esplanade.

History and geographical location of the unit, and overall description of its field and activities:

ISIS was established 01/01/2001 with the aim of developing multidisciplinary reseach at the interface of chemistry, physics, and biology dedicated to use supramolecular approaches to organize matter. ISIS is located at the campus Esplanade of the University of Strasbourg in a dedicated building which will get some extensions in the near future.

Management team:

Director: Mr Thomas EBBESEN

Assistant director : Mr Paolo SAMORI

Executive Manager : Ms Yvette AGNUS

Unit workforce:

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors	8	8	6
N2: EPST or EPIC researchers	5	4	3
N3: Other professors and researchers	8	7	6
N4: Engineers, technicians and administrative staff *on a permanent position	14,2	11,6	
N5: Engineers, technicians and administrative staff * on a non-permanent position	8		
N6: Postdoctoral students having spent at least 12 months in the unit	95		
N7: Doctoral students	29		
N8: PhD defended	30		
N9: Number of Habilitations to Direct Research (HDR) defended	3		
N10: People habilitated to direct research or similar	16	14	
TOTAL N1 to N7	**167,2**	**30,6**	**15**

* If different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.
Definition and downloading of criteria:
http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

2 • Assessment of the unit

Overall opinion on the unit:

ISIS is a remarkable place. Without the scientific focus considered critical for most institutes, without the large body of permanent staff, believed in France to be absolutely necessary for maintaining a high standard in experimental research, ISIS is truly successful in fundamental research in a wide range of topics. Other than a modern building and substantial freedom in conducting its affairs, the institute does not seem to have special privileges or resources. There appears to be a single principle on which ISIS thrives: the commitment to scientific excellence. This principle is driven by a deep-rooted scientific curiosity.

Thriving on the enthusiasm of the PIs, there may also be dangers to an elite system like the one set up at ISIS. It may become very dependent on the strong leadership of the Institute. ISIS does solve this potential danger by setting up a number of rules. These include: a small number of permanent staff, the need to raise a large fraction of its operating budget through external funding by all individual PIs, a commitment to contribute to teaching, a policy of working closely with industry and colleagues from the University of Strasbourg, and the willingness of the leadership to rotate the directorship of the Institute.

So far, this policy has been very successful. There are no unproductive researchers at ISIS. The research is timely and highly visible. Despite the wide range of different research topics, there appears to be a true community in the institute. The reviewers recommend sticking to the spirit and the special rules of ISIS. The institute is a role model for how to run a scientific institution.

Strengths and opportunities:

The goal of ISIS is to study complex problems at the interface between chemistry, physics and biology by attracting the best researchers and providing them with the best working conditions in a free, but responsible environment. ISIS aims at being a center of scientific excellence and to be a link between teaching, research and industry. There is no doubt that ISIS has fulfilled its goals. The Institute is an example of science at a very high level on an international scale and a model of how things should be done on a local scale. The number of high quality papers, the citations per paper, the combined H-factors, etc are extremely high on a global scale in the scientific disciplines in which the groups are active. ISIS is massively supported by European grants. With maturity and growth have come much more extensive collaborations both internally and with external groups/institutions. The long-term strategy set out by the PIs works very well. The choice to function with few permanent researchers, but a large number of doctoral and postdoctoral students, often recruited abroad is to be recommended, if the working conditions allow it. In the case of ISIS, these are optimal, especially with future growth of the available space. In terms of equipment, technical services and scientific interactions everything is excellent, the further integration of equipment for general use, within and outside ISIS, will lead to more efficiency and appreciation by the other users. The open structure of the Institute strongly favors initiatives in particular of the young PIs and encourages them to participate in both national and international activities. This is reflected in the high international visibility of all PIs working in ISIS.

Weaknesses and risks:

The issues to be considered now are the future substantial expansion of the Institute and eventually the replacement of some of the leading members. The process of attracting young scientists is very successful, but for the continuity and stability of the Institute it will be important to find the means to attract PIs in the 45-55 age group. The first development in that direction is almost completed with the recruitment of a new senior professor Ms Luisa de Cola from Münster (team 9).

Recommendations:

1. ISIS has rather extensive computer facilities that are important for all the groups in the Institute. There is currently no technical manager, which means that day to day hardware and software problems must be dealt with by the team members themselves. This situation would justify making the recruitment of an IT specialist a high priority.
2. ISIS currently aims for excellence, before all other criteria, including scientific discipline. It however seems important that the directorate of the Institute should explicitly decide whether future recruits need to have any significant possibilities of collaboration with the existing teams and, if not, whether this represents a long-term risk for ISIS or not.

3 • Detailed assessments

Assessment of scientific quality and production:

The Institute is an example of science at a very high level on an international scale. The number of high quality papers, the citations per paper, the combined H-factors, etc. are extremely high on a global scale in the scientific disciplines in which the groups are active. There are of course differences between the PIs, as to be expected with a spread in age and experience.

The general conclusion of the committee was that in their age groups and among their peers all PIs have extremely high international visibility. For the PIs that recently started their independent work we see a high intrinsic quality based on published papers, awards and ideas presented in the written document, and during presentations. These groups however are not included in the top rating that was unanimously given by the visiting committee, because they have not had time to establish their groups at ISIS.

Assessment of the unit's integration into its environment:

ISIS is well integrated into its local environment and plays its role in both the life of the University and the doctoral school. During the evaluation meeting the representatives of the University and CNRS both expressed their enthusiasm over the functioning and the results of ISIS.

There are examples of startup companies based on patented inventions at ISIS. In the current group of PIs there is a clearly visible positive attitude to protect industrial property.

Assessment of the research unit's reputation and drawing power:

The basis for the existence of ISIS is the combination of a small number of PIs, a very limited number of other permanent researchers, minimal but adequate technical support, and an excellent technical infrastructure. This combination can only work when the PIs are able to attract ample external funding and with that top students and post-docs. ISIS has been extremely successful in doing just that. Most senior PIs have among other things been awarded the very prestigeous high value advanced ERC grants. There will not be many comparable institutions in Europe with such a score. An impressive number of prizes, honorary doctorates, etc. have been obtained.

Assessment of the unit's governance and life:

ISIS will continue to require strong leadership of the Institute. ISIS has a number of excellent young PIs that can fulfill this role. Also important will be that the current rules will strictly be maintained. These include: a small number of permanent staff, the need to raise a large fraction of its operating budget through external funding by all individual PIs, a commitment to contribute to teaching, a policy of working closely with industry and colleagues from the University of Strasbourg, and the willingness of the leadership to rotate the directorship of the Institute.

So far, this policy has been very successful. The committee recommends sticking to the spirit and the special rules of ISIS. The Institute is a role model for how to run a scientific institution, and these rules will keep it from reverting to a regular research institute long after the current generation of leaders will be gone.

Assessment of the strategy and 5-year project:

ISIS's unique structure has an important consequence: the long-term plans are not dictated by an overall strategy by the Institute director but they are the sum of the plans of the individual groups. Details will be discussed in the next section.

Assessment of the unit's involvement in training:

ISIS is well integrated into its local environment and plays its role in both the life of the University and the graduate school.

The 8 academics and 5 researchers are sharing the teaching load, according to a special agreement with the university. Some of them are responsible for Master's units and they train in the laboratory a dozen of Master students every year.

At the doctoral and post-doctoral levels, many young scientists (about 95 during the last period) could benefit from the environment of ISIS. Approximately one third of the PhD students (12 among 28 at present) have a national scholarship, the others are paid by contracts of different sources. All the PhDs get a permanent position or a contracted activity when they leave ISIS. Some habilitations (for research supervision, HDR) are also obtained during the stays in ISIS.

During the visit of the committee the representatives of the University and CNRS both expressed their enthusiasm over the functioning and the results of ISIS.

4 • Team-by-team analysis

Team 1: Laboratoire de Chimie Supramoléculaire

Team leader: Mr Jean-Marie LEHN

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors			
N2: EPST or EPIC researchers	(1)	(1)	(1)
N3: Other professors and researchers	4	4	3
N4: Engineers, technicians and administrative staff * on a permanent position	3,8	2	
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	23		
N7: Doctoral students	3		
N8: PhD defended	6		
N9: Number of Habilitations to Direct Research (HDR) defended	1		
N10: People habilitated to direct research or similar	4	4	
TOTAL N1 to N7	**33,8**	**6**	**3**

* If different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.
Definition and downloading of criteria:
http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The group focuses on the chemistry of dynamic systems, both reversible covalent and supramolecular. Such systems have the advantage that they can change structure and properties upon the action of, or interaction with internal and external factors. The applications are in materials, sensing, information storage, etc. The work is original and has clearly both fundamental and application oriented aspects. The high quality of the work is reflected in more than 80 publications, several patent applications and impressive number of lectures worldwide during the last period. Jean Marie Lehn continues to impress by the selection of topics that are challenging in terms of complexity of the systems although using relatively simple building blocks. In his field he remains the top player. In all aspects he is an internationally highly respected scientist based on his current research that goes a lot farther than the supramolecular chemistry that he founded more than 40 years ago.

Assessment of the research team's integration into its environment:

There are increasingly application oriented aspects in the work, reflected in the patent applications on slow release of aldehydes, alcohols and ketones. The adaptive materials or Dynamers are the result of reversible covalent bonds in these polymers. Under external stimuli these materials change mechanical, optical, or (bio)recognition properties. Although not explicitly mentioned there are contacts with industry that inspire this type of work. Jean Marie Lehn has over the years been able to attract graduate students and post-doctoral coworkers of high quality from the best laboratories all over the world (total of 23 in the reported period, most of them for long periods of stay). The committee did not find any suggestion in the document that points to a lack of funding other than mentioned in the general part of the description of the institute for technical support. The PI recently obtained an advanced ERC grant.

Assessment of the research team's reputation and drawing power:

During this period, Jean Marie Lehn has added a number of international prizes and distinctions to his already impressive list keeping a high capacity to recruit students and post-doctoral coworkers. He is without any doubt the most internationally connected chemist although there is no detailed description of international collaborations in the report.

Assessment of the strategy and 5-year project:

The plans presented for future research are clearly described. The work on the scope and applications of constitutional dynamic chemistry will be further explored with the emphasis on (1) new reversible covalent reactions and dynamic libraries, (2) the effect of external stimuli on their composition and properties, (3) adaptive materials, and (4) allosteric effects and switching properties of such systems. The research program is coherent and will be built on results obtained in the last years. It is ambitious, timely and unique.

Conclusion:

Excellent group in all aspects

Team 2 : Laboratoire des nanostructures

Team leader: Mr Thomas EBBESEN

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors	1	1	1
N2: EPST or EPIC researchers	1	1	1
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position	1,8	1,8	
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	7		
N7: Doctoral students	3		
N8: PhD defended	4		
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	2	
TOTAL N1 to N7	**13,8**	**3,8**	**2**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The group is working in the field of plasmonic nanostructures. Among world-class leaders in this domain in France and abroad, they have been at the root of several world premieres. Their activity is focused on the investigation of the physics that rules the optical properties of nanostructured metallic materials as well as on their use for novel plasmonic devices and circuits. During the last period, the highlights of the group were numerous. One could mention the design of efficient surface plasmon launchers on a metallic surface, a crucial feature for the deployment of plasmonic circuitry. One of the most remarkable results was the realization of miniature waveplates and "photon sorters" based on plasmonic apertures surrounded by a corrugated surface. More important, an extremely promising field was opened with the study of the interaction between a molecule and surface plasmons in the regime of strong coupling.

The excellence of this group is testified by the highest scientific quality of their research activity with an impressive productivity (45 publications, 53 invited talks and 6 patents). The scientific production is not only excellent in number but also in quality through numerous publications in high-visibility journals (Nature Physics, Nature Photonics, Physical Review Letters, Nanoletters, ACNNano…). Their experimental and conceptual approaches are original and relevant to current research problems with an excellent impact on the field (27297 citations).

Assessment of the research team's integration into its environment:

The integration of the group in its environment is very good. The group obtained an Equipex project in collaboration with IPCMS in Cronenbourg. The group successfully competes also for funding at the national and international levels. It holds in particular a prestigious grant of the European Research Council. It is also strongly involved in research valorization with 6 patents during the last period. Last, they run tight and fruitful collaborations with experimentalists and theoreticians based in France (Institut Fresnel…) and abroad (Zaragoza University, Madrid University, Odense University, Berlin University…).

Assessment of the research team's reputation and drawing power:

The outstanding international reputation of the group is evidenced by the large number of invited Keynote and plenary lectures given by the group members (53), as well as by recent national and international prizes obtained by the group principal investigator (election at the French Academy of Sciences, Tomassoni Prize, Quantum Electronics and Optics Prize and Honorary Doctorate by the University of Southern Denmark). These international recognition and reputation allow the group to recruit high level students from various countries and furthermore to attract students with their own grants (Chinese State Scholarship, Rothschild Fellows…). The quality of the training the group offers to these students is testified by their recruitment, after their stay in the group, in world-class institutions as post-docs or on permanent positions, in France and abroad.

Assessment of the strategy and 5-year project:

The group scientific project is in continuity with the presently investigated topics (plasmonic devices and circuitry), with some new and innovative directions such as magneto-plasmonics devices, miniature plasmonic optical traps or Casimir effect. It also puts an emphasis on the interaction of molecules and plasmonic structures with promising perspectives in nano-photochemistry. This will be an opportunity to reinforce the interactions and collaborations with other ISIS groups.

Conclusion:

The research activities of the team rely on the fundamental understanding and exploration of unconventional optical effects produced by light-material interaction in metallic thin films with sub-wavelength apertures. The achievements are outstanding at international level. Although small in size, this team has generated huge impact as well as new expectations in the field of nano-optics. The international recognition of the group is outstanding in terms of invited presentations, awards and citations during the period. Its project is innovative with promising further insights and perspectives that should strongly benefit from reinforced collaborations within ISIS.

Team 3: Laboratoire de Chimie Biophysique

Team leader: Mr Martin KARPLUS

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors			
N2: EPST or EPIC researchers			
N3: Other professors and researchers	1	1	1
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	5		
N7: Doctoral students			
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	1	
TOTAL N1 to N7	**6**	**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The PI is unquestionably one of the founding fathers of molecular simulation applied to biological systems. His former students now head many of the leading simulation groups around the world. In the last four years, the main interests of his group at ISIS (he has a second group at Harvard) have centred on the functional mechanisms of biological assemblies, in particular, molecular motors and on advancing simulation methods, in particular, the calculation of free energy.

The group within ISIS has remained very productive over the last four years with 37 papers, partly due to the 5 postdocs who have spent time in the group and partly to a broad spectrum of collaborators across the world. The PI's own standing in the academic world can easily be judged by an H-factor of 130 and more than 70,000 citations to his work over the years.

Assessment of the research team's integration into its environment:

The presence of the biophysical chemistry team within ISIS has led to numerous collaborations and publications in common with other teams among which two are still going on. The broad interests and expertise of Martin Karplus have undoubtedly made a real contribution to the Institute.

Assessment of the research team's reputation and drawing power:

The PI holds an outstanding international reputation.

Assessment of the strategy and 5-year project:

While the PI is still very productive, the activity of the group is winding down within ISIS. There will be no recruitment of new coworkers but the research will continue in collaboration with other groups, including the continuation of the work with other ISIS teams (reactions in microfluidic systems, HSP90 inhibitors, …) and further work on the functional mechanisms of proteins and protein complexes, including the details of the how chemical reactions generate mechanical work.

Conclusion:

The leader of this group continues to play an active role within ISIS and, through his international standing, to contribute to the overall image of the Institute. However, it is clear that younger teams must take over the task of maintaining strong interactions between molecular simulation and the range of experimental studies within ISIS.

Team 4: Laboratoire de chimie organique et bioorganique

Team leader: Mr Nicolas WINSSINGER

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors	1	1	1
N2: EPST or EPIC researchers	1	1	1
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position	1	1.8	
N5: Engineers, technicians and administrative staff * on a non-permanent position	2		
N6: Postdoctoral students having spent at least 12 months in the unit	17		
N7: Doctoral students	6		
N8: PhD defended	6		
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	2	
TOTAL N1 to N7	**28**	**3.8**	**2**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

This goup works in the area of chemical biology and is positioning in a broad chemical domain that makes available to biology the tools and techniques of chemistry, and thus allows biological entities to be controlled, manipulated, redirected and even transformed. Over the past number of years, the field has been a scientific goldmine. The results obtained by the group during the last period are a good balance between academic research and possible practical applications.

The group has two research foci which are both timely, challenging, and produce highly visible results. The first focus is on nucleic acids and nucleic acid analogues as tools for bringing molecules into close proximity. For example, peptide nucleic acids (PNAs) are loaded with functional molecules and are hybridized to a DNA strand of complementary sequence. The small molecules presented include fragments of enzyme inhibitors, carbohydrates, and chromophores. The approach does not require a previous knowledge of the target and can be used without a known substrate or ligand (exemplified by proteases, phosphatases). The group has worked on a specific nucleic acid-templated Staudinger reduction of a quenched fluorophore or linker. This technology can be used to detect the presence of a specific mRNA transcript in live cells or to release a bioactive molecule. PNAs is much more stable and easier to use in orthogonal fashion than DNA.

The second focus of the group is on libraries of derivatives of complex natural products. Here, new synthetic approaches are developed that lead to compounds with improved pharmaceutical properties. Natural products provide an unparalleled starting point for drug discovery, with over 60% of anticancer agents entering chemical trials in the last three decades being based on such compounds. In recent years pharmaceutical industries have shied away from natural products due to the perceived synthetic intractability, and drug discovery pipelines are beginning to run dry. This is a concern when faced with the need to combat the ever-increasing problem of drug resistance and increasingly dangerous infectious diseases. The group is developing synthetic strategy in natural product families amenable to diversification, such as the resorcyclic acid lactones (RAL) with a high number of ATPase and kinase inhibitors. The group has also discovered a potent HSP90 inhibitor which proved effective in a xenograft tumor model. The group uses an impressive array of techniques, ranging from state-of-the-art multi-step organic syntheses to selection assays with genetic read-out and amplification. About 90 papers have been published and the number of invited lectures and seminars is 23. The productivity (approx. 10 papers per year, plus patents) is very high, given the size of the group. At an early age, the PI has already become member of editorial boards of top journals like ChemBioChem. He has obtained a number of prestigious awards, including an ERC young investigator grant.

Assessment of the research team's integration into its environment:

The group is integrated well into ISIS. It collaborates with theoretical and experimental colleagues, in Strasbourg, nationally, and internationally. During the latest period, the group has patented a total of six inventions which provided the basis for the founding of a start-up company (Negenix Eu), a contract of collaboration with Johnson and Johnson, and possibly with other companies. In addition to industrial contracts, the PI has obtained a European Research Council (ERC) young investigator grant of 1,500 k€, started in 2008.

Assessment of the research team's reputation and drawing power:

The Principal Investigator has an excellent international reputation. He attracts top students and postdocs from a number of different countries. His recent prizes and distinctions are: ERC young investigator laureate- 2008; Acros Prize, SFC, 2008; Prix Guy Ourisson du cercle Gutenberg-2009, IUF junior-2008, editorial member of Artificial DNA: PNA and XNA (2009-present), editorial advisory board of ChemBioChem (2010-present). The international collaborations include those with the National Cancer Institute, Maryland; the Genomics Institute of the Novartis Foundation in San Diego; the Scripps Research Institute, California, Harvard Medical School, Massachusetts, and the TMU Munich.

Assessment of the strategy and 5-year project:

The group is planning to expand its approach of using the power of organic synthesis, combinatorial chemistry, rule-based molecular recognition, and clever selection techniques. It makes excellent use of modern technologies, such as microarrays with optical read-out, PCR, and molecular amplification of signals. The goals defined in the five-year plans are promising. The two major themes are the continued use of PNA to program assemblies and the synthesis of libraries of natural product analogues for the discovery of biological probes and therapeutics. Simplifying the selection-cum-amplification methodology and reducing the cost associated with this technique is one important practical goal, and so is the expansion of the range of substrates and targets. An application in this area will be to tackle targets that have proven refractory to small molecule drug discovery. Another objective will be to combine libraries of peptides in order to display different architectures. The PNA-based approach has advantages over approaches using DNA (synthetic ease, chemical stability, more likely to be active in cells), but also has its limitations (long sequences can have problematic properties, potentially strong interactions with target). The expansion of the natural products project to new classes of biological targets and scaffolds is also promising, and the synthetic challenges defined were selected well. It will be interesting to see how many new bioactive compounds will be identified in the process. Certainly, the group will chart interesting new territory in total synthesis in the process.

Conclusion:

The PI has become one of the leading young scientists at the interface of synthetic organic chemistry and chemical biology. The group shows an interesting balance between academic research and practical applications. It has gained an international reputation on the subjects which are developed. It is expected that by the end of the next contract the group will have further extended its standing in the competitive area it is working in, but it may also have focused its scientific goals. At ISIS, the PI has built an excellent team and has established his own original research. Some breakthroughs as independent scientist can already be identified. He is well known for utilizing modern techniques from a range of different disciplines to solve problems of molecular recognition and biological activity. The group is very productive and visible. This young team has the potential to be among the global leaders of their domain in the future.

Team 5: Laboratoire de biologie Chimique

Team leader: Mr Andrew GRIFFITHS

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors	2	1	1
N2: EPST or EPIC researchers	1		
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position	1		
N5: Engineers, technicians and administrative staff * on a non-permanent position	4		
N6: Postdoctoral students having spent at least 12 months in the unit	24		
N7: Doctoral students	8		
N8: PhD defended	6		
N9: Number of Habilitations to Direct Research (HDR) defended	1		
N10: People habilitated to direct research or similar	1	1	
TOTAL N1 to N7	**40**	**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The group has developed an independent research portfolio that provides highly relevant new technologies which will have major impact on neighboring disciplines. It developed the so-called droplet technology which serves as a new miniaturization and automation strategy for handling liquids and compounds, performing rapid analyses on miniaturization scale and adding new concepts to thermodynamics of complex systems. This research not only provides groundbreaking developments of micro fluid technology but also the tools in order to advance other disciplines to a new level. It is a truly key technology which will have massive impact on research in general and on the concept of ISIS and the other groups. His technology will initiate new concepts and programs in chemical-biological areas as well as physical-material areas alike and will act as a nucleation point for truly interdisciplinary and innovative projects.

The PI (with an h-factor 37 and 126 citations per paper) has published 27 papers in the last 5 years which is a very high impact in particular since these papers describe new technologies developed in his laboratories. He is certainly one of the leading groups world-wide with respect of quantitative output and technological innovation in the area of micro fluid concepts. The enormous impact of his research is finally expressed by the fact that he has 53 patents or patent applications.

Assessment of the research team's integration into its environment:

This excellent research combines both, basic research and application to existing problems. Additionally, it can be applied to basically all variations of molecular sciences; ranging from biology to materials. Its valorization is already visible not only due to a variety of different cooperations with academic and industrial groups but also based on the companies that he founded or co-founded. The PI is also on the advisory board of plasticell. The group and his research are extremely well integrated into ISIS and this research offers a variety of extensions to the other groups.

Assessment of the research team's reputation and drawing power:

The group has research collaborations with a variety of different research groups and academic as well as industrial institutions. Among these are companies such as Sanofi, GSK, Novozyme, Soufflet and RainDance Technologies which was co-founded by the PI. These interactions speak of his very high scientific reputation which brings to collaborate only with the forerunners of a given technology. Scientifically, the high impact that his papers have (126 citations per paper as the average) provides a telling example about his academic reputation.

Assessment of the strategy and 5-year project:

The five-year project is a logical development of the current activities and was already supported by two major grants from the French Government. Central to these activities is the compartmentalization of biochemical systems as the technology developed in the group. This technology will be applied towards drug discovery and nanobiotechnology (Diagnostics).

Parallel to these activities they will focus on the role of compartmentalization as a prerequisite to prebiotic chemistry and consequently to the origin of life. This project takes advantage of the thermodynamic properties of droplets and can therefore mimic the development of reproducing systems at surfaces. Again, the technology is a prerequisite to answer fundamental questions. In the end, the droplet-concept will be combined with the SELEX strategy in order to investigate self-reproducing systems.

Further basic research projects will address the evolution of genes and metabolomes and horizontal gene transfer as well as new functions in enzymes. Besides these more fundamental questions the group will apply its technology together with industrial partners (Soufflet, Novozyme, DSM …) in the area of enzymatic research. Additionally, a vaccination project together with EMBL (Heidelberg) on the HIV Env is planned. Together with Sanofi and RDT a small molecule drug discovery program has been initiated.

Conclusion:

The group is very well integrated into the scientific concept of ISIS and has ample contacts to industrial and academic partners. The development of novel technologies is world-wide recognized and the group is considered to be one of the driving forces in micro fluid technologies. Consequently they will provide a variety of applications for other partners. Their involvement in start-up companies, their interaction with established companies as well as the impressive number of patents and patent-applications speaks of their impact on applied science. Their impact, with 126 citations per paper as the average, gives a good perspective of how innovative their basic research is conceived.

Team 6: Laboratoire de nanochimie

Team leader: Mr Paolo SAMORI

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors	1	2	2
N2: EPST or EPIC researchers			
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	9		
N7: Doctoral students	5		
N8: PhD defended	5		
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	2	
TOTAL N1 to N7	**15**	**2**	**2**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The group is clearly a leader in the field of supramolecular approaches. Activities are focused on the design of nanostructured materials at surfaces and interfaces using supramolecular approaches in various directions. With a very high resolution, the group studies self-assembled structures at surfaces and interfaces obtained from a range of different experimental techniques to grow two- and three-dimensional assemblies and crystals on surfaces. Possible applications of these structures include responsive materials and supramolecular or molecular electronics. There is no doubt that the group presents an excellent scientific performance. In spite of its small size, the scientific production of this group is exceptional (83 papers) in journals of very high impact.

Assessment of the research team's integration into its environment:

The group is very well integrated in teaching and in training of high level students recruited from leading institutions world-wide. Furthermore, the activities at interfaces lead the group to collaborate abroad, in Strasbourg and in France with other groups. In addition to classical supports (University of Strasbourg and CNRS), researches of the group are supported by the FRC Foundation in Strasbourg and the group has a remarkable participation to European projects as partner (Marie Curie Early Stage Training, ERA Chemistry, Marie Curie Research Stage Networks, Integrated Project, NanoSciEra) as well as coordinator (Marie Curie Initial Training Networks, ERC).

Assessment of the research team's reputation and drawing power:

The international recognition of the group is now well-established with the presentation of 28 Invited Keynote or Plenary Talks and 25 Invited Seminars. The citations number of publications of the team is also excellent, with a total of 3637.

The recognition is also illustrated by the obtention of several distinctions by the PI: Nomination at IUF, Nicolò Copernico Award, Prix Guy Ourisson du Cercle Gutenberg. The PI is also Member of the Advisory Board of high impact factor: Adv. Mat., J. Mat. Chem., Nanoscale, ChemPhysChem.

Assessment of the strategy and 5-year project:

Novel supramolecular structures designed by the team will be used for different electronic applications, using the relationship between architecture and the targeted function. The team will focus on electroactive supramolecular structures, multi-chromophore arrays, and molecular electronic devices, such as field-effect transistors on a supramolecular level. The construction of device prototypes will be also considered. The proposal has already been evaluated and selected for funding at the highest level (ERC). This is the best index of the excellence of this project. The ERC project "Suprafunction" (2011-2016) started in April 2011.

Conclusion:

The Nanochemistry Laboratory has developed exciting new techniques for the assembly of novel materials and assemblies on surfaces, using supramolecular chemistry. Its activities on the design of nanostructured functional systems led to an exceptional production in terms of number of papers as well as in quality. This group is now one of the leaders in supramolecular materials field. The international recognition of the group is also excellent in terms of invited presentations, awards, high level editorial activity. This recognition is also illustrated by the participation and the obtention of numerous European projects, such as an ERC grant.

Team 7: Laboratoire de physique cellulaire

Team leader: Mr Daniel RIVELINE

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors			
N2: EPST or EPIC researchers	1	1	1
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	2		
N7: Doctoral students	3		
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	1	
TOTAL N1 to N7	**6**	**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The focus of the group is on the physics of cells and more specifically cell motion and cell shape transformation induced by chemical agents, mechanical forces or adhesion patterns. This subject is highly important for both fundamental research and advanced applications in life sciences. It is also highly interdisciplinary and challenging, which requires a lot of efforts from both theoretical and experimental points of view. As expected, the group demonstrated its excellent ability to produce high quality scientific results in this very competitive field: they published 8 papers in high impact journals and issued 1 worldwide patent protection over the last four years (in total the PI has published 24 papers with 71 citations per publication in average, which is pretty high in his field). So far, three topics have been developed in the laboratory: i) the rectification for cell motion on patterned surface (cell ratchet), ii) drug promoted growth of lamellipodia of cells (effect of superpolyamines) and iii) egg cup trapping of cells for high content screening (Ringtech). The success of these original developments does not only open a variety of application possibilities but also places them in a very competitive position at international levels.

Assessment of the research team's integration into its environment:

The group has been created in ISIS less than three years ago but it has already shown an excellent performance in terms of research, teaching and technological transfer (to a Start-up company) activities. It has also shown a remarkable collaboration network both inside and outside ISIS (France, Germany, USA, Israel, etc.). Due to the fact that this group is at the interface between physics, chemistry and biology, it can take a lot of benefits from the multidisciplinary competences of ISIS but it can also bring new knowledge to the colleagues of ISIS. Its integration inside ISIS as well as at national and international level will be extremely important.

Assessment of the research team's reputation and drawing power:

The scientific contribution of the PI is very significant and he has been identified as one of the most promising young scientists in the field, capable to tackle highly complex and high risk interdisciplinary projects. His installation in ISIS is also very successfully, which should allow him to gain a rapid reputation. Thanks to the growing dynamism of the field as well as his well-established international collaborations, the PI should also be able to build a wonderful drawing power in the near future.

Assessment of the strategy and 5-year project:

The scientific project of the group aims at a systematic study of cell fluctuation in single cells and cell monolayers as well as force distribution in developing embryos. On one hand, cells are regulated by their microenvironments including extracellular matrix, soluble factors and cell-cell coupling. But these have not yet been clearly understood. A more detailed analysis of the cell growth dynamics and the signaling events will be necessary by using various types of patterned substrates and biochemical stimulants. On the other hand, cells are regulated by genetic and epigenetic materials. The use of identified drugs or appropriate supra-molecules will allow a more clear understanding of cytoskeleton dynamics related pathways. In both cases, numerical simulations would be very useful for cell fluctuation studies. Therefore, the proposed project is elegant and fundamentally important but external funding or collaborations might be needed for more efficient explorations.

Conclusion:

The implementation of this junior group in ISIS is successful and extremely important from different points of views. It brings new knowledge to ISIS which is complementary to all other ISIS groups. It is at the interface between physics, chemistry and biology with a growing dynamism at national and international levels. Both its scientific quality and 5-year project have been highly appreciated. Therefore, its research activities should be continued with a long term strategy.

Team 8: Laboratoire de Chimie organo-minérale

Team leader: Mr Jean-Pierre SAUVAGE

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors			
N2: EPST or EPIC researchers			
N3: Other professors and researchers	1	1	1
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit			
N7: Doctoral students			
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar	1	1	
TOTAL N1 to N7	**1**	**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

This team was created very recently in ISIS (2010) by a world leader in mechanically interlocked molecules (MIMs), a field that the PI has contributed to create by proposing novel and efficient synthetic strategies in 1983. Among the most remarkable recent achievements, one can select: i) the preparation of cyclic [4]rotaxanes able to behave as switchable molecular receptors or consisting of two stiff rods threaded through two bis-macrocycles and ii) the quantitative formation of a tetra-porphyrin[2]catenane via copper and zinc coordination.

In the last five years the PI has published 72 papers in high impact factor journals and was cited an average of 1550 times each year. (Altogether his number of citations was 27 243 with an h-index of 86 and an average of 53 citations per item).

Assessment of the research team's integration into its environment:

This brilliant research is mainly academic at a very high level. The valorization of the research can take some time since difficult practical problems in molecular machines have to be resolved. This chemistry can be defined as an up-stream area.

The PI has been invited to teach at the Master level at Strasbourg, Northwestern and Bologna universities, about artificial photosynthesis, molecular topology and molecular machines and motors.

Assessment of the research team's reputation and drawing power:

The PI has been awarded with many national and international prizes, plenary lectures, named lectures all over his career. In his previous laboratory in Strasbourg, he was able to recruit a bunch of talented young scientists and has maintained fruitful collaborations with several groups either in France or abroad.

Assessment of the strategy and 5-year project:

The PI, now emeritus, continues his activities jointly at Northwestern University and at ISIS. The projects of the group at ISIS are concerned with the synthesis of new challenging objects. Collaborations will be continued for a while with the members of his former group. There will be also collaborations on phosphorous-containing porphyrins and their use as rotary motor prototypes. Very creative chemistry can therefore be expected in the next few years.

Conclusion:

Before moving to ISIS on mid 2010 where he is now hosted as Professor Emeritus, the PI has worked abroad for a while when he became emeritus in 2009 (at Northwestern University or in Bologna).

This new group in ISIS is at the present time virtually restricted to the PI with two part time research associates. However collaborations will continue with scientists in two other chemistry units in Strasbourg, and also in Northwestern University. Therefore, the PI should find support to continue this fecund professional activity.

Team 9: Laboratoire de chimie et de biomatériaux supramoléculaires

Team leader: Ms Luisa DE COLA

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors			
N2: EPST or EPIC researchers			
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit			
N7: Doctoral students			
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar			
TOTAL N1 to N7			

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

The committee decided not to evaluate this group because Luisa de Cola will only join ISIS in 2012. Her current research at Muenster covers a wide field of subjects, from photo physics to materials for imaging and bio–applications. She is very productive and has published many high quality papers in top journals.

Her joining of ISIS will definitely strengthen the Institute and will be important for the international position of the Institute.

Assessment of the research team's integration into its environment:

She collaborates intensively with industry: Roche Diagnostics, Merck and Solvay are mentioned specifically. The group is extremely well connected in several formal networks and through a very large personal network. She was one of the first to obtain an advanced ERC grant.

Assessment of the research team's reputation and drawing power:

She has won several awards and prizes, eg she was recently nominated as one of the leading female chemists in the world. In Muenster she has built up a large international research group. She will be very active to set up internal collaborations as she has done at the other places where she worked.

Assessment of the strategy and 5-year project:

The document describes very briefly and in general terms the research strategy for the coming years. The focus will be on the self-assembly of luminescent molecules in large aggregates that will have different properties from the starting materials. Such systems will be tested for cell penetration and drug delivery.

Conclusion:

This is a very promising group, and it will be a perfect addition to ISIS

Team 10: Laboratoire d'ingénierie des fonctions moléculaires

Team leader: Mr Marco CECCHINI

Workforce

Workforce	**Number** on 06/30/2011	**Number** on 01/01/2013	2013-2017 **Number of producers****
N1: Professors or assistant professors		1	1
N2: EPST or EPIC researchers			
N3: Other professors and researchers	1		
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit	2		
N7: Doctoral students			
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar		1	
TOTAL N1 to N7	**3**	**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of scientific quality and production:

This young team was created just over a year ago, following the award of a "chair d'excellence" to Marco Cecchini, who had previously a five year postdoc in the group of biophysical Chemistry in ISIS. The group now includes two postdocs. There are 9 publications over the last 4 years, of which 6 as postdoc activity of the PI. Understandably, given the recent creation of the team there have been only 3 independent publications. The main research themes are energy transduction mechanisms (actin-myosin, P-type ion pumps) and 2D self-assembly mechanisms (collaboration within ISIS). In addition, the team works on methodologies for free energy calculations and for describing transition paths.

Assessment of the research team's integration into its environment:

The group had just time to adapt to this particular environment and collaborations are starting within ISIS. The group has sufficient office space and access to a dedicated computer cluster. However, the lack of a computer manager within ISIS is a danger and the team should not be obliged to take on this responsibility.

Assessment of the research team's reputation and drawing power:

These are early days for this group. Start up funds have made possible the recruitment of two postdocs. The research is of good quality, but naturally influenced in part by previous activity.

Assessment of the strategy and 5-year project:

The group presents a rather large spectrum of projects, which cover both methodology (improved free energy methods) and further extensions of the two distinct research areas already underway (2D assembly and energy transduction mechanisms). This seems a lot to tackle for a team of only three people, especially noting that the group leader has to teach and that the postdocs are only funded until early 2012.

Conclusion:

The group is faced with the significant challenge of steadily becoming the main simulation arm of research in ISIS. So far the group has been doing good work and, in particular, the new collaboration in ISIS on 2D assembly is original and promising. The group is however in a fragile situation and clearly needs to secure new funding in order to consolidate its position.

Team 11: Laboratoire de physique quantique

Team leader: Mr Guido PUPILLO

Workforce

Workforce	Number on 06/30/2011	Number on 01/01/2013	2013-2017 Number of producers**
N1: Professors or assistant professors		1	1
N2: EPST or EPIC researchers			
N3: Other professors and researchers			
N4: Engineers, technicians and administrative staff * on a permanent position			
N5: Engineers, technicians and administrative staff * on a non-permanent position			
N6: Postdoctoral students having spent at least 12 months in the unit			
N7: Doctoral students			
N8: PhD defended			
N9: Number of Habilitations to Direct Research (HDR) defended			
N10: People habilitated to direct research or similar		1	
TOTAL N1 to N7		**1**	**1**

* **If** different, indicate corresponding FTEs in brackets.

** Number of producers in the [01/01/2007-06/30/2011] period who will be present in 2013-2017.

Definition and downloading of criteria:

http://www.aeres-evaluation.fr/Evaluation/Evaluation-des-unites-de-recherche/Principes-d-evaluation.

• Detailed assessments

Assessment of the strategy and 5-year project:

The project of the Laboratoire de Physique Quantique deals with the theory of polar molecules, in view of their use in quantum information science. With the recent experimental advances in cold molecules physics – in particular on degenerate quantum gases, there will certainly be a growing interest in advanced theory on this subject, in particular due to the possibility to efficiently control and tune their external dynamics via external fields. In the coming years, the group will focus on this highly topical subject, by investigating novel schemes for cooling complex polar molecules towards quantum degeneracy. Such investigation is of crucial importance for practical implementation. The project also exploits such cold dipolar gases to realize novel many-body phenomena (such as many-body quantum phases) and to investigate the effects of the long-range interactions on the dynamics of many-body systems. Last, novel schemes allowing the control and tunability of the dipole-dipole interactions via external fields will be developed in view of engineering the collective modes of atoms and molecules in optical lattices or self-assembled solid crystals.

Conclusion:

The activity is undoubtedly of very high quality and the project is in the forefront of highly topical subjects on degenerate quantum gases. The project is very broad for a small team and is rather new within ISIS but also in the local scientific context. The full potential of this new team with undoubtedly high-quality research as well as new expectations in the field will strongly benefit from close collaborations with other theoretical and experimental activities with French or international teams in the field of degenerate molecules.

Teams who recently left ISIS

Team 12*: Laboratoire de chimie des biomolécules

Team leader: Mr Sylvain LADAME

Workforce

Conclusion:

The leader of this group moved from ISIS in July 2010 to join the department of Bioengeneering at Imperial College London as a lecturer in Biosensors. He published in that period 10 papers in Angew. Chem and Chem Eur J. Main interests were dynamic fluorescent chemosensors, near-infrared absorbing dyes, and PNA conjugates.

Team 13*: Laboratoire de biologie du développement et des cellules souches

Team leader: Mr Frank McKEON (departure from the ISIS December 2010)

Workforce

Conclusion:

The laboratory of biology and stem cells functioned for 2 years (2008-2010). The PI was awarded an ERC grant for Imflammatorics in 2009 and published 2 papers in Cell. He moved to Singapore (Genomics Research Institute) in december 2010.

5 ● Grading

Once the visits for the 2011-2012 evaluation campaign had been completed, the chairpersons of the expert committees, who met per disciplinary group, proceeded to attribute a score to the research units in their group (and, when necessary, for these units' in-house teams).

This score (A+, A, B, C) concerned each of the four criteria defined by the AERES and was given along with an overall assessment.

With respect to this score, the research unit concerned by this report (and, when necessary, its in-house teams) received the overall assessment and the following grades:

Overall assessment of the unit: Institut de science et d'ingénierie supramoléculaire - ISIS

Excellente unité à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**A+**	**A+**

Overall assessment of the team: Laboratoire de Chimie Supramoléculaire

Excellente équipe à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**A+**

Overall assessment of the team: Laboratoire des nanostructures

Excellente équipe à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**A+**

Overall assessment of the team: Laboratoire de Chimie Biophysique

Équipe dont la production et le rayonnement sont excellents et qui ne présente pas de projet propre.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**NN**

Overall assessment of the team: Laboratoire de chimie organique et bioorganique

Excellente équipe à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**A+**

Overall assessment of the team: Laboratoire de biologie Chimique

Excellente équipe à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**A+**

Overall assessment of the team: Laboratoire de nanochimie

Excellente équipe à tous points de vue.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A+**	**-**	**A+**

Overall assessment of the team: Laboratoire de physique cellulaire

Équipe dont la production et le projet sont excellents. Le rayonnement est très bon.

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
A+	**A**	**-**	**A+**

Overall assessment of the team: Laboratoire de Chimie organo-minérale

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
NN	**NN**	**-**	**NN**

Overall assessment of the team: Laboratoire de chimie et de biomatériaux supramoléculaires

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
NN	**NN**	**-**	**NN**

Overall assessment of the team: Laboratoire d'ingénierie des fonctions moléculaires

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
NN	**NN**	**-**	**NN**

Overall assessment of the team: Laboratoire de physique quantique

Grading table:

C1 Scientific quality and production.	C2 Reputation and drawing power, integration into the environment.	C3 Laboratory life and governance.	C4 Strategy and scientific project.
NN	**NN**	**-**	**NN**

Overall assessment of the team: Laboratoire de chimie des biomolécules

Grading table:

C1	C2	C3	C4
Scientific quality and production.	Reputation and drawing power, integration into the environment.	Laboratory life and governance.	Strategy and scientific project.
NN	**NN**	**-**	**NN**

Overall assessment of the team: Laboratoire de biologie du développement et des cellules souches

Grading table:

C1	C2	C3	C4
Scientific quality and production.	Reputation and drawing power, integration into the environment.	Laboratory life and governance.	Strategy and scientific project.
NN	**NN**	**-**	**NN**

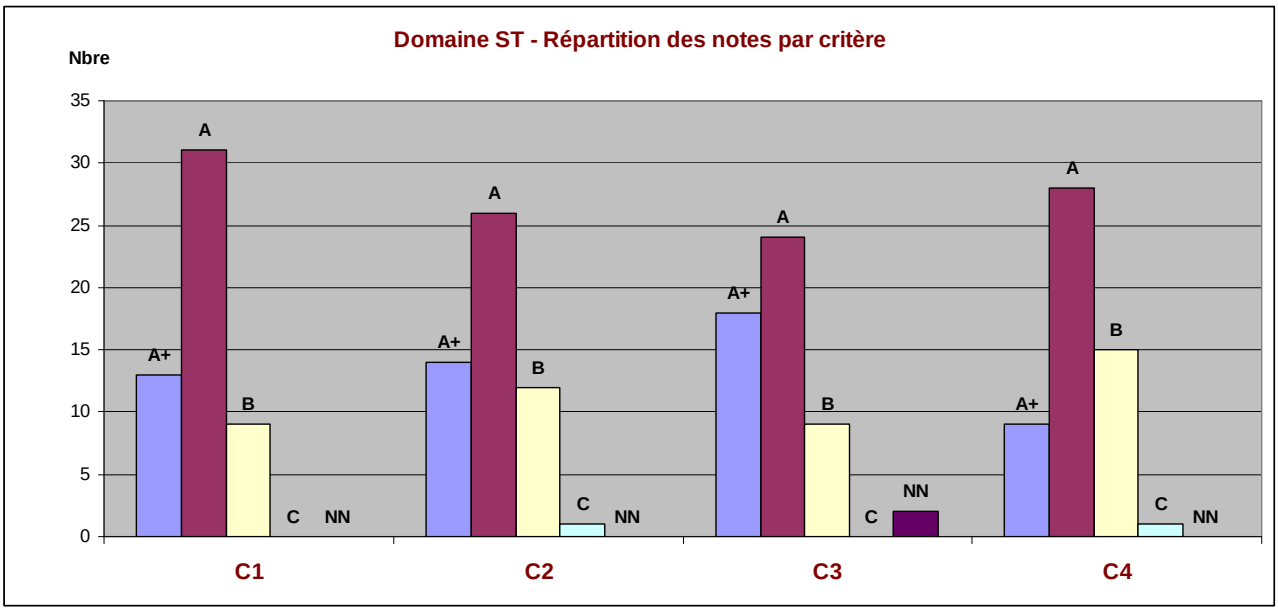
6 ● Statistics per field

Notes

Critères	C1	C2	C3	C4
	Scientific quality and production	Reputation and drawing power, integration into the environment	Laboratory life and governance	Strategy and scientific project
A+	13	14	18	9
A	31	26	24	28
B	9	12	9	15
C	-	1	-	1
Non noté	-	-	2	-

Pourcentages

Critères	C1	C2	C3	C4
	Scientific quality and production	Reputation and drawing power, integration into the environment	Laboratory life and governance	Strategy and scientific project
A+	25%	26%	34%	17%
A	58%	49%	45%	53%
B	17%	23%	17%	28%
C	-	2%	-	2%
Non noté	-	-	4%	-



7 ● Supervising bodies' general comments

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Alain BERETZ
Président

Strasbourg, le 9 mars 2012

Objet : Rapport d'évaluation de l'UMR 7006 Institut de sciences et d'ingénierie supramoléculaire (réf. S2PUR130004510-RT)
Réf. : AB/EW/N° 2012-109

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Cher collègue,

Je vous remercie pour l'évaluation de l'unité mixte de recherche « Institut de sciences et d'ingénierie supramoléculaire » (ISIS – UMR 7213) dirigée par Monsieur Paolo Samori.

Le directeur de l'unité de recherche et moi-même n'avons pas de remarques particulières à formuler sur le rapport d'évaluation rédigé par le comité d'experts.

Je vous prie d'agréer, Cher Collègue, l'expression de mes sentiments distingués.

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P.J. :

- **Une première partie corrigeant les erreurs factuelles**
- **Une seconde partie sans observations**