

# EUROPEAN CHITIN SOCIETY NEWSLETTER

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## SPECIAL ISSUE

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## EDITORIAL

First of all I must offer my apology for this issue of the Newsletter being so long-overdue. The delay has been due to several problems, both practical and personal, and I hope that ECS members will forgive the lapse.

This is a special single-issue Newsletter dedicated to Professor Alain Domard who retired recently. I am very glad to say that it is not an obituary, as Alain is still very much alive and in good health, nor is it a 'Festschrift' as it contains no original scientific contributions. Rather it is an opportunity for some of his colleagues to give both their personal reminiscences and their good wishes for the future to him and his wife Monique.

His scientific output has been considerable and the recognition of his stature as a scientist both in France and world-wide can be seen from his CV which is included in this issue. On the tomb of the great British architect Sir Christopher Wren, who designed many of the great buildings erected in London after the Great Fire of 1666 is the inscription *Si monumentum requiris, circumspice*, which translates as "If you seek a monument, look around." Modifying this, and remembering that, thankfully, Alain is still very much alive, I would say *Si monumentum requiris, spectato* "A perspective on thirty years research on chitin and chitosan". In a recent e-mail to me Alain described this paper, which he presented at the 11<sup>th</sup> ICC/8<sup>th</sup> APCCS meeting in Taiwan in 2009 and subsequently published as *Carbohydrate Polymers*, 2011, **84**, 696-703, as his "scientific testimony", and shows clearly the breadth of his research activities in chitin and chitosan. It had been intended to reproduce it in full at the end of this issue but unfortunately were unable to obtain permission from the publishers, Elsevier, in time.

To those younger members of the 'chitosan family' who may be aware of his scientific publications but know very little about his other contributions in the field of chitin and chitosan chemistry I should explain that Alain:

- was the main driving force behind the foundation of the European Chitin Society in 1992
- inaugurated the EUCHIS chitin/chitosan conferences in 1995
- inaugurated the "Advances in Chitin Science" series of publications in 1996

and hence has had a very large impact not only on the science of chitin/chitosan, but also on its international management.

George Roberts  
Editor





*Poznan-2004*



*Taiwan-2009*



*Taiwan-2009*

*Photographs by S. Senel*

## **Professor Alain Domard – a personal recollection**

I first met Alain in 1980 when I spent a few weeks working in Professor Margurite Rinaudo's polysaccharide research group in the CNRS Centre attached to the Université Joseph Fourier in Grenoble. At that time they were considering starting research on chitin and chitosan, but had not actually begun, and perhaps one of my main contributions to the chemistry of chitin and chitosan was to give Alain a sample of chitosan before I left Grenoble that August. Indeed the final view of the lab as I was leaving was of Alain carrying out an acid titration on the chitosan.

Following on from then we met regularly at chitin conferences, beginning with the 3<sup>rd</sup> ICCC meeting in Senigalia in 1985, but the most significant one was the 5<sup>th</sup> ICCC meeting in Princeton in 1991. By this time he had his own research group at the Université Claude Bernard, Lyon I, and was an established member of the 'global chitosan family'. I was feeling somewhat isolated as most of the other scientists present were part of sizeable national groups, and with the announcement at that meeting of the setting up of the American Chitin Society and the fact that I mistakenly thought that there was already an Asian-Pacific Chitin Society, I started thinking about a grouping for European chitosan researchers. I first suggested this one lunch time to an eminent European chitin scientist present at the meeting but could detect no interest; however when I then suggested it to Alain he was immediately full of enthusiasm and said he would contact me about it when he got back to his laboratory.

To this day I am not really sure what sort of 'Society' I had in mind, some loose association was as far as I had taken it in my mind, but Alain had no doubts whatsoever. He was determined that it would be a properly set up and regulated Society, controlled by statutes and managed by an elected Board. So starting in October 1991 we had a steady correspondence by fax – unfortunately e-mail and Skype were not available then – as he set up and developed the outlines of what was to become EUCHIS. I still have a large folder of these faxes, now slowly becoming difficult to read as the ink fades from black to a pale brown, together with numerous conventional letters, as testimony to the amount of effort Alain put into the setting up of EUCHIS. This activity culminated with the meeting he organised in Lyon on March 27<sup>th</sup>, 1992 in which 13 delegates, including Alain himself, took part. They were V Boutiotis (Gr), A Domard (Fr), J Dutkiewicz (Pol), M-M Giraud-Guille (Fr), G Goffinet (Bel), C Jeuniaux (Bel), R Muzzarelli (It), M Peter (Ger), G Roberts (UK), K-D Spindler (Ger), H Struszczyk (Pol), M Terbojevich (It), K Vårum (Nor). A 14<sup>th</sup> delegate – G Gooday (UK) – had to withdraw at the last moment due to illness. A photograph from the meeting is shown below; the more observant readers will immediately see that there are only 12 delegates in it – the missing delegate is the late Professor Struszczyk.

Alain was the first President of The European Chitin Society following its setting-up. During his term of office he inaugurated the biennial EUCHIS conferences and chaired both the EUCHIS '95 and EUCHIS '97/7<sup>th</sup> ICCC meetings. He subsequently co-chaired the 10<sup>th</sup> ICCC meeting in Montpellier with Eric Guibal and Kjell Vårum. He also initiated the "Advances in Chitin Science" series with the proceedings of EUCHIS '95 as Volume I. This series has now been adopted as the medium for publication of the proceedings for a number of regular chitin/chitosan conferences in addition to those of the EUCHIS meetings.



*Delegates (excluding H Struszczyk who is taking the photograph) at the founding meeting of the European Chitin Society. How many can you identify? Replies by e-mail to the editor (unfortunately there is no prize for the first correct answer).*

Since that time I have met Alain on many occasions at conferences around the world and have been a member of the jury for several of the PhD students from his prolific research group in Lyon. At all times I have enjoyed his company, and that of his wife Monique when she has been present, and have always found his comments and insights very instructive. My one regret is that we never managed to collaborate on a research project, despite several joint proposals to funding agencies. It would have been a very welcome addition to my CV.

I send Alain and Monique all my best wishes on his retirement from chitin/chitosan research, particularly in the new role they are soon to take up as grandparents.

George Roberts



## **EUCHIS Conferences with Alain**

Professor Alain Domard will be remembered for several achievements in his scientific career. His initiative to organize the European Chitin Society (EUCHIS) is very important, and I will here share with you some of my memories in relation to chitin/chitosan conferences and especially the biannual conferences arranged by EUCHIS.

In March 1992, Alain invited 12 European chitin/chitosan researchers (including himself) to Lyon (France), and the agenda was to initiate the organization of EUCHIS. This event is reviewed in more detail in another article in this issue (authored by George Roberts). I recall from this meeting in Lyon a friendly atmosphere with nice food and wine in the capital of gastronomy in Europe! Alain became the first president of EUCHIS, and in the first issue of the European Chitin Society Newsletter, he writes that the major objectives of EUCHIS should be the organization of a European meeting every two years and a newsletter to communicate with the members. Both these objectives have been successfully achieved with EUCHIS. The organization of summer schools was a third important objective, although they have up to now only been arranged occasionally. It may be a good idea to revitalize the organization of summer schools for members with initiative and capacity!

The first EUCHIS meeting was organized by Alain in Brest (France) in September 1995. The meeting was a success, and formed the settings of the future meetings arranged by EUCHIS, the last one so far was the 9<sup>th</sup> organized in Venice (Italy) in 2009. As usual at scientific meetings in France, the food and wine was excellent in Brest. My only objection to the 'French arrangements' is that the nice lunches with generous amounts of food and wine followed by a scientific session in a (dark) lecture hall has the consequence that the after-lunch lecturers has a hard time keeping the attention of the audience! With the publication of the proceedings book from the first EUCHIS conference, Alain initiated the first volume of "Advances in Chitin Science". His intention was undoubtedly to contribute to future publication of proceedings from chitin and chitosan conferences. Up to now eleven volumes in this series have been published, including all the proceedings of the EUCHIS meetings (for details, see: <http://www.euchis.org/advances.php>).

The next EUCHIS meeting was also organized by Alain in Lyon two years later, this time as a joint event with the 7<sup>th</sup> International Conference of Chitin and Chitosan (ICCC). Alain invited George (Roberts) and me to edit the proceedings book with him. We reviewed the manuscripts after the conference, which was again a success with more than 230 delegates from 35 different countries. It was quite a job to review the manuscripts as Volume II of "Advances in Chitin Science" ended up with a total of 964 pages. We were helped in this by Frances Wood, George's colleague and occasional co-author, who had good secretarial skills having typed the complete manuscript of George's book 'Chitin Chemistry'.

In June 2002 I hosted the 5<sup>th</sup> EUCHIS meeting in Trondheim, with Alain and Olav (Smidsrød) as co-chairmen. I experienced that the arrangement of an international conference is much more work than (at least) I anticipated. We are indebted to organizers of EUCHIS meetings for the many unpaid hours they spend. Alain almost always attended the chitosan conferences accompanied by his wife

Monique. She was herself educated in chemistry, and my impression was that she knew very well all the persons working with Alain, and probably was a very important person not only to Alain but also to his group.



*Alain, Monique and the author of this article in a relaxed atmosphere during the EUCHIS meeting in Trondheim in June 2002 (Photograph: private)*

In the autumn of 2002, I was attending a EU project meeting organized by Alain in Port Carmague in the Languedoc-Roussillon region by the Mediterranean Sea. During this meeting he invited us to his beautiful apartment at the sea-side. I am sure they will now have the opportunity to spend more time in Port Carmague. Perhaps Alain can also spend more time enjoying leisure activities as an alternative to writing and editing scientific manuscripts!

The next event organized by Alain was the joint event of the 7<sup>th</sup> EUCHIS meeting and the 10<sup>th</sup> ICCC meeting in Montpellier in September 2006, with Eric Guibal and myself as co-organizers. The conference took place at “Le Corum”, which offered excellent facilities for the conference and the lunches. Alain always contributed with articles to the proceedings books from the chitosan conferences. In the (electronic) version of the proceedings from this conference Alain is the co-author on nine articles, in addition to five lectures that were published with their summary.





*Alain at “Le Corum”. Photograph taken in Montpellier, September 2006 (Courtesy of “Advances in Chitin Science”, Vol. IX).*

I met Alain again at the 11<sup>th</sup> ICCC in Taipei (Taiwan) in September 2009 organized by Professor Chen, and as usual he was accompanied by Monique. At this event he was already retired as a professor. It is always wise to know when to change the direction in your life, and my feeling was that Alain now wanted to enjoy other aspects of his life while he and Monique are still at good health. I hope they will experience many good years of that life. The chitosan community and EUCHIS have good reasons to thank you for your contributions.

Kjell M. Vårum

## **A few (affectionate) words to Alain Domard**

I did not hesitate a single minute to contribute with a few words to Alain Domard, when I was requested to do so by an e-mail from the President of the European Chitin Society. After reading that inviting e-mail, three images came to me all of a sudden.

First image: in 1997 I came back as a “young senior scientist” to the research planet of chitosan, after having served three years as a Deputy Director General in the Spanish Ministry of Education and Science. The first thing I did when landing anew at my lab, was to register for that year’s ICCC, organized in Lyon by Alain Domard. I recovered in a hurry some data and sent the respective abstract. My joy when I got the notification for an oral presentation was great and it became even greater when I arrived there. I cannot forget the powerful image of Alain playing host at the dining room entrance the first day.

That congress meant for me and for my professional future a one way opening towards the Latin American scientific community, as I met there excellent professionals from Cuba, Mexico, and Argentina, some of whom afterwards spent various times in my lab, where we have scientifically grown up together. We sowed in Lyon the seeds of the Iberian American Chitin and Chitosan Society, which later shaped up at Potsdam. Later on many joint projects were coming, within the framework of the cooperation scheme CYTED and the Alfa PolyLife net.

Second image: in 2004 I was called again by the Government to be appointed Director General of Consumers at the Ministry of Health and anew in Lyon, visiting Professor Domard’s Laboratory in the framework of the Alfa net. I gave up my scientific activity and transferred it to my collaborators, when I saw that it was not possible to combine Administration and Academia.

Third image: in 2009, back again in science, I was presenting a key-note presentation on “Chitosan as a copassenger”, I saw Alain Domard coming into the room to friendly and attentively listen my speech. Having such an outstanding expert hearing my modest presentation was an enormous satisfaction for me, but it was even greater when he came at the end and congratulated me for my coining of the term “copassenger” to describe some activities of this biopolymer.

This is all I wanted to say on and to Professor Alain Domard: *firmissima est inter pares amicitia*, “very solid is the friendship among colleagues”.

Angeles Heras Caballero

## **Something about Professor Domard**

Rong Huei Chen

Emeritus Professor of Department of Food Science, National Taiwan Ocean University

Director of R & D Center, Seaparty International Co., LTD

The first international chitin chitosan conference I attended was the 1st Asia-Pacific Chitin Chitosan Symposium which was held at Bangi, Malaysia in 1995. In 1996, I attended the 1<sup>st</sup> International Conference of European Chitin Society held at Brest, France, where I met Professor Domard, he was the chairman of the Conference, but we did not interact with each other at that time. The 3<sup>rd</sup> Asia-Pacific Chitin Chitosan Symposium was held at Keelung in 1998. As one of the organizers, I invited Prof. Hirano, Prof. Tokura, and Prof. Domard as our invited speakers. Since then we have known each other better. After the Symposium, he suggested to me to publish the conference proceedings as part of the "Advances in Chitin Science" series. Thus we published "Advance in Chitin Science, Vol. III". In 2000 I was going to publish a paper in the International Journal of Cosmetic Science, which required a synopsis in English and a Resume in French. I know no French and did not have any French friends, so I asked Professor Domard for help. I sent him my synopsis and in a very short time he mailed me back the French resume and our paper was published. I am very grateful to him for that kindness. My personal feeling about Prof. Domard is that although he looks very strong and stout he is, however, very polite and gentlemanly. His voice is slow and soft. The conferences he has organized are always very well planned. The scientific program has a high academic level and is informative. The food served in the conference is very delicious and is always served with French wine. From three conferences held at Brest, Lyon, Montpellier, I had chance to visit a very famous ship museum, where I saw a very unique and beautiful Kayak from Orchid Island, Taiwan, a 700 year old church, a famous wine producer, and a famous castle (built to protect against pirate invasion).

## **Professor Alain Domard**

**by**

**Dr. Eric Guibal**

I first met Alain Domard at the ICCC meeting in Gdynia, Poland, in 1994, which was my first international chitin meeting, and am indebted to him for all the help he gave me towards entering the “Chitin and Chitosan family”. This help continued and over the years I learnt a lot from him through a number of collaborative research projects, resulting in joint publications, and by our joint participation in several Ph.D. juries. He was also instrumental in my becoming a member of the Euchis Board. I also had the honour of sharing with him the organisation of the joint 10th International Chitin & Chitosan Conference/EUCHIS '06 meeting in Montpellier in 2006.

Over the years I have had the pleasure of enjoying some special moments with him and his wife Monique, particularly at the APCCS meeting in Bangkok in 1998 and the SIAQ meeting in Natal in 2008, and in his seaside retreat in Port-Camargue. He has been a major figure in the advancement of chitin and chitosan science and I appreciate that throughout the years that I have known him his door has been wide open for fruitful discussions to fellow research workers in the field.

## Congratulation for your Happy Retirement

Dear Prof. Alain Domard

Thank you very much for your nice friendship to me and kind interest in my chitin/chitosan works. After retirement, you will have much more chitin works for you and for world chitin investigators.

Please take care and enjoy your second life with your wife and family.

With my best regards,

Saburo Minami, DVM, Ph.D  
Professor, Tottori University, Japan



*Photos are exciting dancing with Prof. Domard and me at the entertainment of the banquet in the 11<sup>th</sup> International conference of chitin/chitosan hold in Taiwan (2009).*

## Domard

It is impossible to fully describe the impact that Alain Domard has had on the field of chitosan – yet I will try.

The Domard team has contributed extensively to the understanding of chitosan and its potential applications. His team's use of advanced characterization methods combined with its systematic and rigorous scientific investigation allowed them to explain chitosan's behavior in terms of generalized laws. These general laws of behavior will substantially advance the field by providing insights on how to control interactions important to such phenomena as aggregation, gelation and nanoparticle formation. Importantly, the Domard team has a long history of seeking collaborations and these pioneering efforts have enhanced the team's impact and expanded the overall visibility of the field. For instance, collaborations with the Universite J. Fournier (Grenoble) enabled a characterization of chitosan's microstructure in the various forms from polyelectrolyte solutions to physical gels. Further, Dr. Domard's pursuit of collaborations with medical researchers (e.g., Universite Paris V) is enabling a thorough evaluation of chitosan for applications in regenerative medicine. The depth and breadth of this team's knowledge is displayed in their recent *Nature* paper (*Nature* **452**, 76, 2008)!

In addition to his team's science and technology, Dr. Domard has advanced the study of chitosan through his leadership in founding the European Chitin Society and serving on various international committees. Particularly important were his efforts to organize the international conferences in Lyon (1997) and Montpellier (2006).

At a personal level, I am quite grateful to Dr. Domard. Shortly after beginning my studies with chitosan I attended my first international conference in Lyon. Alain graciously welcomed me into the scientific community and generously shared his time to speak with me – despite the many pressing issues he faced as the organizer. These kindnesses make EUCHIS a vibrant society and their meetings such pleasant events. During our trip to Lyon, my wife and I also had the pleasure to meet Alain's lovely wife Monique who warmly welcomed us to France. Since that introduction, we have had the pleasure of enjoying the Domards' company at several meetings in various locations around the world.

In closing, my wife and I would like to wish Alain and Monique a wonderful retirement – although my lab appears committed to disrupting his retirement through our continued collaboration. Thanks Alain, but one more thing ...

Gregory F Payne



## CURRICULUM VITÆ

**DOMARD Alain**, Born 14-09-1944 at Revin , France, married, 2 children

**Personal address:** 74, Boulevard des Belges, 69006 Lyon (France)

**E-mail:** alain.domard@gmail.com

### Universitary Titles

1969	Master of Science (Chemistry), Grenoble, France
1970	Pre-doctorate «Physical organic chemistry» (Grenoble), ( <i>Good</i> )
1971	PhD (Grenoble)( <i>Very good + congratulation</i> ) <i>Jury</i> : D. GAGNAIRE, M. RINAUDO, G. SPACH
1976	Doctorate <i>es sciences</i> (Grenoble), ( <i>Very Honourable + congratulation</i> ) <i>Jury</i> : H. BENOIT, P.G. de GENNES, A. RASSAT, M. RINAUDO and G. SPACH
1986	Diploma of enabling of research direction (Grenoble)

### Universitary Career

01/10/1970	Lecturer
01/10/1977	Senior Lecturer
01/01/1985	1 <sup>st</sup> Class Senior Lecturer
01/10/1987	2 <sup>nd</sup> class Professor
01/09/1994	1 <sup>st</sup> class Professor
01/09/2004	Exceptional class Professor, 1 <sup>st</sup> grade
01/09/2006	Exceptional class professor, 2 <sup>nd</sup> (last) grade

### Member of Research Societies:

1977	Groupe Français d'Etudes et d'Applications des Polymères
1991	American Chitoscience Society
1992	European Chitin Society
1996	Groupe Lyonnais des Glycosciences
2001	Bioencapsulation Research Group

### Responsibilities

- Responsible of a research team with 5 permanent researchers, 2 technicians, 1 secretary
- Director of the Laboratory for 4 years
- Founder and President of the European Chitin Society for 5 years
- Chairman of EUCHIS '95, and the 7th ICCC, co-chairman of numerous others
- Scientific expert for the 5th PCRD of the EC for 5 years
- Member for 5 years of the National committee of the scientific research (France)

- Member of advisory boards and session chairman of numerous International conferences

### **Scientific Production**

- 137 papers (web of science) + > 150 proceedings
- 19 patents
- 5 ed. of books
- 30 PhD theses
- >70 Invited lectures

### **Miscellaneous**

- Total citation N° 3675
- Hirsch factor, HF = 37
- Average citation per paper > 27,82
- Production of the first fully deacetylated chitosan with a sufficient molecular weight. Thanks to the complete knowledge of the various chemical and physical parameters of the deacetylation reaction, and the use of the FTP treatment, production of a fully deacetylated chitosan of Mw over 450 000 g/mol.
- Production the two series of glucosamine and N-acetylglucosamine oligomers up to DP 13 and 8, respectively
- Production of homogeneous series of controlled architectures (same DPw with different DAs or reversely, same DA with different DPw)
- Knowledge of the solution properties with various laws of variation of:  $dn/dc$ , viscosity, second virial coefficient, gyration radius, etc. with DP or DA, allowing the complete Mw characterization by chromatography and the understanding of the formation of nanoparticles and hydrogels, only containing chitosan and water
- Production of multi-membrane hydrogels under various forms (fibres, capsules) constituting interesting bioreactors
- Two new concepts: of the “reverse encapsulation” and of “the materials decoys of biological media”