



Universidad  
Carlos III de Madrid

Acto del Día de la Universidad  
del curso académico 2015/16 en el que serán investidos  
como doctores *Honoris Causa* los profesores

Herbert Danninger

y

Alberto Molinari

29 de enero de 2016

12:30 horas

AULA MAGNA EDIFICIO RECTORADO  
Universidad Carlos III de Madrid  
Campus de Getafe. Calle Madrid, 126  
Getafe, Madrid.





**LAUDATIO DE LOS PROFESORES  
Dr. HERBERT DANNINGER  
Dr. ALBERTO MOLINARI  
A CARGO DE LA PROFESORA Dra. MÓNICA CAMPOS GOMEZ**

**LAUDATIO FOR PROFESSORS  
Dr. HERBERT DANNINGER  
Dr. ALBERTO MOLINARI  
BY Dr. MÓNICA CAMPOS GOMEZ**

EXCELENTÍSIMO Sr Rector Magnífico de la Universidad Carlos III de Madrid, Presidente del Consejo Social, Director General de Universidades, Sres. y Señoras Vicerrectoras, Alcaldesa de Getafe, Señor Director del Departamento de Ciencia e Ingeniería de Materiales e Ingeniería Química, Sra. Directora del Instituto Tecnológico Álvaro Alonso Barba, Ilustrísimas autoridades académicas, Profesores, Profesoras, señoras y señores.

HONOURABLE Rector of the Universidad Carlos III of Madrid, [Esteemed]Chairman of the Social Council, Director General of Universities and Research, Mayoress of Getafe , Vice-rectors, Director of the Department of Material Science and Engineering and Chemical Engineering, Director of the Álvaro Alonso Barba Institute of Technology, Academic Authorities, Ladies and Gentlemen

Poder hacer hoy la Laudatio de los profesores Danninger y Molinari, representa para mí una enorme emoción y alegría. Agradezco esta oportunidad que me ha brindado la Universidad Carlos III para poderles presentar a dos figuras ejemplares en sus ámbitos de conocimiento. Durante toda mi carrera docente e investigadora he tenido el privilegio de poder contar con su apoyo, colaboración y consejos. Permítanme citar al eminente Ingeniero químico, el Dr. Jack Welch, empresario estadounidense y uno de los directores ejecutivos de mayor influencia en el mundo empresarial del siglo XX:

***"Si tus acciones inspiran a otros a soñar más, a aprender más, hacer más y ser mejores, eres un líder"***



It gives me very great pleasure to present this laudatio for Professors Danninger and Molinari today. I would like to express my gratitude to the Universidad Carlos III for giving me this opportunity of introducing two such exemplary figures in their spheres of knowledge. Throughout my career in lecturing and research I have enjoyed the privilege of receiving their advice, collaboration and support. If I may be allowed to quote the eminent chemical engineer Dr Jack Welch, American entrepreneur and one of the most influential executive directors of the twentieth-century business world :

*"If your actions inspire others to dream more, learn more, do more and become more, you are a leader."*

Ellos sin duda alguna han inspirado a que generaciones de jóvenes investigadores soñaran más, aprendieran más, hicieran más y quisieran ser mejores.

Professors Danninger and Molinari have most certainly inspired generations of young researchers to dream more, learn more and aspire to becoming more.

El Profesor Herbert Danninger, hoy decano de la Facultad de Ingeniería Química en la Universidad Técnica de Viena, lleva 30 años involucrado en el campo de la investigación de los materiales sinterizados. Ha sido distintivo de su carrera científica el rigor, los elevados estándares de calidad de sus resultados y sobre todo su insaciable capacidad de expandir y mejorar el conocimiento dentro de este campo. Nunca ha descuidado ni la comprensión de los fundamentos básicos ni el impulso de los desarrollos tecnológicos. Es autor o coautor de cuatro libros, tiene más de 420 publicaciones censadas por pares, numerosas ponencias en Congresos, ha sido organizador de 7 Congresos Internacionales en Pulvimetalurgia, y consultor de empresas sinterizadoras.

Professor Herbert Danninger, currently Dean of the Faculty of Chemical Engineering at the Technical University of Vienna, has spent thirty years engaged in research into sintered materials. His scientific career has been distinguished by the rigour, the high quality standards of his results and, above all, his inexhaustible capacity to expand and enhance knowledge within this field. He is the author or co-author of four books, has written some four hundred and twenty peer-reviewed publications, presented numerous papers at conferences, organised seven International Conferences on Powder Metallurgy and also acts as a consultant for sintering companies.

Si se analizara la evolución histórica de la pulvimetalurgia en los últimos 25 años, no sería posible entenderla sin estudiar las importantes contribuciones que ha hecho el Profesor Danninger a ella

If the historical evolution of powder metallurgy over the last twenty-five years were to be analysed, it would be impossible to comprehend it without studying Professor Danninger's vital contributions.

Su ánimo de transformar lo que empezó siendo una 'tecnología menor' en un competidor de primera línea (la todopoderosa industria del acero), le llevó a difundir y apostar por este campo de investigación superando a veces importantes barreras geopolíticas. Su afán de colaboración le llevó a buscar puentes eficientes entre la llamada Europa del "este" y del "oeste" que atenuasen el aislamiento de muchas comunidades científicas y poder transmitir y mejorar el conocimiento del conjunto.



His determination to transform what started out as a “minor technology” into a frontline competitor (against the all-powerful steel industry) inspired him to promote and support this field of research, sometimes overcoming significant geopolitical barriers. His zeal for collaboration led him to build efficient bridges between what are termed “Eastern” and “Western” Europe, in order to alleviate the isolation of many scientific communities, transmit knowledge and improve that of the community as a whole.

Pero no sólo los hitos curriculares que se recogen en el papel marcan su carrera. Los que hemos podido trabajar con él, hemos dado cuenta de su lealtad como colaborador y socio de proyectos de investigación, de sus brillantes debates en los foros científicos, de su capacidad como docente transmitiendo conocimiento y, sobre todo, entusiasmo. Cuando el Profesor Danninger está en tu misma sala siendo tú el ponente, sabes que gracias a sus reflexiones, su capacidad de crítica y sus preguntas, tu investigación crecerá superando fronteras que no te habías trazado. No importa si el ponente es un alumno de doctorado o un investigador senior, el Profesor Danninger preciso en el análisis, siempre intentará tomar perspectiva, entender el problema y aportar una idea.

However, his career is not only illustrated by highlights detailed on paper. Those of us who have had the opportunity of working with him will be aware of his loyalty as a colleague and partner on research projects, of the brilliance of his debates in the scientific forums, of his ability as a teacher, transmitting knowledge and above all enthusiasm. When we are in the meeting room speaking in front of Professor Danninger, we know that thanks to his reflections, his capacity for criticism and his questions, our research will develop, overleaping boundaries which we had not previously considered. Whether the speaker is a doctoral student or a senior researcher, Professor Danninger, with his gift for accurate analysis, will always try to take a long view, grasp the problem, and contribute an idea.

Fortalecer la investigación, consolidarla, es un trabajo no sólo individual sino resultado de estrechas y sinceras colaboraciones entre los miembros que integran la comunidad científica. Durante más de dieciocho años los profesores Danninger y Molinari, han mantenido un vínculo activo con nuestra Universidad a través de múltiples proyectos de investigación dónde destaca la Cátedra Höganäs. Gracias a este marco colaborativo se han desarrollado diecisiete Tesis Doctorales en las se ha primado el intercambio de conocimiento, las estancias en las distintas instituciones y el intercambio cultural. El entramado de relaciones científicas y personales que se ha establecido en este contexto, catalizado por los profesores Danninger y Molinari, una varias generaciones de profesores, profesionales en la empresa y estudiantes de más de cinco países. Gran parte de mis estudiantes se han formado en muchas técnicas de laboratorio bajo su supervisión en Viena y Trento.

To strengthen research, to consolidate it, is a not only an individual task but the result of close, sincere collaboration between the members of the scientific community. For over eighteen years Professors Danninger and Molinari have maintained an active link with our University through various research projects, most importantly the Höganäs Chair. Thanks to this collaborative framework, seventeen Doctoral Theses giving priority to the exchange of knowledge, extended stays at other institutions and cultural exchange have been carried out. The network of scientific and personal relationships established in this context under the auspices of Professors Danninger and Molinari has brought together several generations of lecturers, company professionals and students from more than five different countries. A great many of my own students have been trained in laboratory techniques under their supervision at Vienna and Trento.



Mi propia carrera investigadora se ha conformado gracias a su generosidad durante mis años de doctorado y las subsiguientes cooperaciones. Ellos, aún en la distancia, me sirven de guía como referentes, me alientan con su optimismo en los momentos de ofuscación o desencanto que siempre acompañan al desarrollo de la carrera científica.

My own research career has taken shape thanks to their unbounded generosity during my doctoral studies and our subsequent collaborative work. Even at a distance they offer guidance as mentors and never fail to encourage me with their optimism in the moments of confusion or disillusionment inevitable during a scientific career.

El profesor Molinari ha sido además Profesor Visitante en nuestra Universidad en 2009 gracias al programa de movilidad del Ministerio de Ciencia e Innovación. Contribuyó a la internacionalización de nuestro Programa oficial de máster, a reforzar su calidad y generar el Espacio Europeo de Educación Superior que estaba comenzando.

Professor Molinari was Visiting Professor here at our University in 2009 thanks to the mobility programme run by the Ministry of Science and Innovation. He contributed significantly to the internationalization of our official Masters Programme, to improving its quality and generating the European Higher Education Area, then newly established.

El Profesor Molinari es sin duda, uno de los grandes referentes Europeos en el campo de la Tecnología de Polvos. Su carrera investigadora ha equilibrado la aplicación de los principios fundamentales y la innovación y el desarrollo de tecnología en la industria. Su calidad en la producción científica, no sólo queda reflejada en sus más de 400 contribuciones, sino además el número de veces que son citados sus resultados nos muestra una carrera sólida y prestigiosa. Organizador de Congresos Europeos y Mundiales en el campo de la Pulvimetalurgia, siempre se ha esforzado en buscar la formación de redes científicas que se complementen y sean operativas para alcanzar resultados competitivos.

Professor Molinari is without a doubt one of the leading European authorities in the field of Powder Technology. His research career has balanced the application of the fundamental principles, innovation and the development of technology in the industry. The excellence of his scientific production is reflected not only by some four hundred contributions but also the frequency with which his findings are cited – evidence of a well-established and prestigious career. The organiser of European and World conferences in the field of Powder Metallurgy, he has always sought to build scientific networks which both complement one another and serve to attain competitive results.

Su implicación investigadora y docente, su compromiso con su Universidad dónde ha sido decano, vicerrector y director de departamento demuestra su aproximación a la gran figura académica que es y que ejerce. No he conocido discípulo de entre sus más de 200 Tesis de Grado y 25 Tesis doctorales que no hablen de él sino con entusiasmo, respeto y admiración. Gracias al convenio Erasmus que compartimos, docenas de nuestros ingenieros han pasado por su magisterio y sus laboratorios.

His dedication to research and teaching, his commitment to his university, where he has occupied the positions of deacon, vice-rector and Head of Department, are testimony to his merit as a great academic figure. Of his more than two hundred postgraduate thesis and twenty-five doctoral thesis students, all those I have known speak of him with enthusiasm,

respect and admiration. Thanks to the Erasmus Programme we share, dozens of our engineers have received tuition from him and studied in his laboratories.

Del Prof Molinari he aprendido muchas cosas. No hay que perderse en la sofisticación. Un investigador debe estar en predisposición de detenerse frente a las cosas para tratar de obtener de ellas su esencia y sus características. Hay que comprometerse con el problema como única alternativa para que, junto con los conocimientos, se pueda forzar a la imaginación a plantear soluciones creativas. He aprendido que si la imaginación se paraliza, no hay que caer en el riesgo de la pérdida de ilusión o entusiasmo. Hay que ser capaces de buscar nuevos retos que despierten de nuevo la motivación. Por ello, he hecho mía una expresión suya que me sirve de acicate: **“why not?”**.

Personally, I have learned many things from Professor Molinari. One should not lose oneself in sophistication. A researcher must be willing to stop and consider things, try to discover their essence, determine their characteristics. We must commit to the problem as the only option if, duly equipped with knowledge, we are to compel our imagination to come up with creative solutions. I have learned that if the imagination fails, we should not allow ourselves to lose hope or enthusiasm. We must be capable of seeking new challenges which reawaken our motivation. For this reason, I have adopted one of his expressions as an incentive: **“why not?”**

¿Acaso no es el fin último de la investigación dar respuesta a problemas desconocidos?.

After all, is not the ultimate aim of research to respond to unknown problems?

Pero más allá del puro trabajo científico, docenas de encuentros al amparo de reuniones de proyectos, visitas técnicas, congresos, seminarios, talleres, cursos de verano han forjado una relación personal y una amistad sólida, robusta y generosa.

Besides purely scientific work, the many occasions on which I have met the professor- at project meetings, on technical visits, at conferences, seminars, workshops and summer courses - have allowed us to forge not only a personal relationship but also a strong friendship.

Nos encontramos sin duda ante dos investigadores cuyas trayectorias han demostrado su compromiso con su profesión, con sus colegas, con sus discípulos y con las instituciones a las que pertenecen o con las que han colaborado. Su curiosidad intelectual, su crítica y sobre todo su creatividad científica sirven de ejemplo e inspiración.

Undeniably, we are today in the presence of two researchers whose careers have demonstrated their commitment to their profession, their colleagues, their students and the institutions to which they belong or with which they collaborate. Their intellectual curiosity, critical powers and above all their scientific creativity surely serve as an example and inspiration to us all.

Por todo lo expuesto, creo firmemente que la incorporación de los Profesores Molinari y Danninger a nuestro claustro de doctores nos honra y nos enriquece como institución académica. Así, solito a nuestro Rector Magnífico que proceda a su investidura como Doctores Honoris Causa por la Universidad Carlos III de Madrid.



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For all these reasons, it is my firm belief that the incorporation of Professors Molinari and Danninger into our Senate of Doctors both honours our university and will enrich it as an academic institution. Therefore, I would ask our Honourable Rector to proceed with their investiture as Doctors *Honoris Causa* of the Universidad Carlos III of Madrid.

29 de Enero de 2016  
January 29th, 2016

## **INAUGURAL ADDRESS**

### **Prof. Dr. HERBERT DANNINGER**

Excelentísimo y Magnífico Señor Rector, dear colleagues and friends,

It is a great honour for me to receive the Doctor honoris causa of UC3M, a university we have been cooperating with for many years, and it is not only the scientific link but I have to pleasure to regard the colleagues from UC3M as personal friends.

Of course, UC3M and TUW have not generated the links between Madrid and Vienna, but there is a much longer tradition: those of you who have attended the PM2004 World Congress held in Vienna 12 years ago will also remember the logo which showed the Austrian coat-of-arms and within it a white horse. As you will know, this horse symbolizes the “Spanish Riding School” which is one of the major attractions of Vienna but also reminds us of the close ties between Spain and Austria for many centuries. We can recall Emperor Charles V, in Spain King Carlos I, in whose empire the sun did not set. We can also look at the art galleries, the Prado in Madrid and the Kunsthistorische Museum in Vienna, and we can see the intense exchange of fine art that emerged from the ties between Spain and Austria. In part this has been a consequence of the numerous intermarriages between the Habsburg dynasties in Spain and Austria. But as we know, this was not too beneficial for the physical and mental health of the offsprings, and the result was that a new dynasty started to reign in Spain – symbolized by King Carlos III, whose name this university bears. By the way, this is also a message to universities: be careful to avoid inbreeding, “boiling in your own sauce”, as we use to say, but be open to others. Alberto here is a sign that we have avoided Spanish-Austrian inbreeding, but we have integrated also colleagues from Sweden and Slovakia and many more.

In these days, the links were political and cultural. Today, we have also scientific links, in particular through our joint focus, powder metallurgy. This is based in part on the fact that both Spain and Austria are extraordinarily strong in the powder metallurgy industry which in turn has also supported academic research and education in this important field of materials science and technology. This also holds for Italy, therefore it was natural that UC3M, UdT and TU Wien would find together. The bond was initially the project Höganäs Chair, initiated by

Prof. Torralba, but in the meantime there are other joint activities – which is natural, since we know very well what each of us can do, and we can trust each other, which is essential also in science.

There are however also other items that bind us together: one of them is that we do recognize longterm trends but not like to follow fashions. As you know, also science has its fashions, and there are many institutions and researchers that follow each new fad, “jump on the bandwagon”, which frequently has the consequence that they work on each topic for a short time and then change to another one. However this is a good recipe for being third rate in all cases since, as we all know, becoming top class in a given field of science takes years of hard work.

There is of course pressure on scientists to follow the fashionable trends since many funding organizations tend to do the same. In my opinion this is a risky policy, in particular in basic research, since nobody knows which results and knowhow will be required in 20 years’ time from now. I remember Prof. Werner Schatt from Dresden who used to say: “the notion that basic research can be planned is an error” (he even used the German word “Irrlehre” which means “heresy”).

On the other hand, as a scientist nowadays you have to go where the money is, in particular if you do experimental work. Here, the PM groups in UC3M and UdT as well as TUW have the big advantage that we always have had a lot of projects funded by the industry. This implies that we do not fully depend on the public funding organizations and their fashions. Of course, also working for the industry is a tough job. Compared to e.g. EU projects, the proposals can be much shorter and more concise, and the chances to get a project are usually higher, but as soon as you have the contract, you have to deliver results on and on, and the quality control is much tougher than with public-funded projects. With industry projects your duties do not end as soon as you have the project granted but just have started. I think this is also a feature that unifies us: the willingness to work with and for the industry – and therefore, on the long run, for the consumer - and the knowhow for doing it.

It is a great honour for me to be awarded the doctor honoris causa from UC3M, and I am grateful to the Rector and the University authorities, to those colleagues who have sponsored this award, Department of Materials Science and Engineering and Alvaro Alonso Barba Institute, and of course to my “academic mother” or “Madrina” Monica Campos Gomez. However I also want to appreciate all my coworkers, the generations of diploma and PhD students, in particular those who have been involved in the joint projects with UC3M. I thank the funding partners, public and industry. And I want to thank in particular the partners from UC3M and UdT, Jose Manuel Torralba and Alberto Molinari and their teams, for their support and cooperation and also for their friendship. We started as coworkers, but we have become friends!

Thank you



## **INAUGURAL ADDRESS**

**Prof. Dr. Alberto Molinari**

EXCELENTÍSIMO Magnífico Rector de la Universidad Carlos III de Madrid, Sres. y Señoras Vicerrectoras, Ilustrísimas autoridades académicas, Profesores, Profesoras, señoras y señores.

I am feeling a great emotion and the honour to receive this prestigious award from your University.

I am very close to Universidad Carlos III de Madrid thanks to a scientific cooperation with prof. Jose Manuel Torralba and his group, which started in the early nineties and has grown through the participation to the Höganäs Chair project. Professor Torralba conceived this project, which developed along fifteen years, representing an excellent example of fruitful cooperation between universities and industry. It involved several PhD students from Technical University of Wien, Carlos III University of Madrid, Slovak Academy of Science in Kosice and University of Trento, and I have the pleasure to remind that my Madrina prof. Monica Campos has been one of the first ones. Due to this close scientific relation, I can recognize and appreciate the qualification and the high profile of your University, and I express you my warm thanks for the prestigious award I am receiving today and for the consideration you are expressing on my academic work.

On receiving this Doctor Honoris Causa award my thought goes to my Magister, Professor Alberto Tiziani from Padua University. He not only stimulated my interest on Powder Metallurgy; he also gave me important teachings that I applied in my work and communicated to my students. The most important one in relation to scientific research was that on reading papers in literature, as well as on doing experiments and the analysis of the results, we have to practice the critical sensibility. This teaching was very important to me when I was doing my master thesis in the pre-computer era, and it is perhaps even more important today, when our work is supported by the tools and the applications of Computer Science and of Information and Communication Technology. As in the past I observed, just as an example, an uncritical approach towards the results provided by the new experimental techniques based on the



sophisticated spectrocopies, I quite frequently verify the same approach today, towards the outputs of Computer Science and ICT. This may be the case of a bibliographic research on internet, but even of a complex modelling of physical and chemical phenomena as those occurring in materials. Results of these works are sometimes assumed, in particular by the students and the young colleagues, as true as such without a critical analysis of their reliability and significance. I am definitely aware of the great usefulness of these tools, but I still believe that computer cannot completely substitute a well-trained brain of a man and of a woman.

The critical sensibility can only be supported by a solid theoretical background and the aptitude for reasoning. In our countries, materials engineers are mostly employed by the manufacturing industry to work on product development, quality control and continuous improvement. In this context, the knowledge of the base principles of the behaviour of materials, of the technological processes and of designing methodologies, as well as the methods to apply them to practical cases through reasoning, is the best cultural heritage we may help our students to build-up.

Academics are teachers and researchers, and our research affects positively the quality of education, since through research we continuously improve and update the knowledge we transfer to our students.

Teaching and research are the two main activities of an academic. University has the social scope to support the social and economic development of humanity through the development and the spreading of knowledge. Research is functional to development; teaching is functional to spreading of knowledge. We are asked to find the right equilibrium and combination between these two activities. To this purpose, the procedures implemented to evaluate academics should give the same importance to the two activities. In my country, such an evaluation is based only on the scientific performances of academics, and this does not contribute to establish an equilibrated academic community. Indeed, in particular young colleagues, are forced to concentrate their work on research, with the risk that less efforts are put in teaching, that means on spreading the knowledge. This way, University will progressively disregard its role in the Society.

Our students, all our students are the motive of existence of University and, in turn, of us as professors. They are demanding, of course. On getting old I realize an ever greater difference between me, when student in the middle of the seventies, and them. However working with them is a great opportunity, since it helps us to understand the world in evolution. Moreover, they can return our efforts with their diligence and their performances; sometimes they can give us amazing emotions. A few years ago I was here as a visiting professor, to give a course in the PhD programme. Two years later I read in the acknowledgements of the PhD thesis of one of the students of that course "Alberto, your lessons opened my eyes". I will never forget what I could do with my lessons, and I want to dedicate this award to all my students.

Thanks to my Madrina prof. Monica Campos, to prof. Jose Manuel Torralba, to the Rector and the academic authorities of the Universidad Carlos III de Madrid and the Alvaro Alonso Barba Institute!