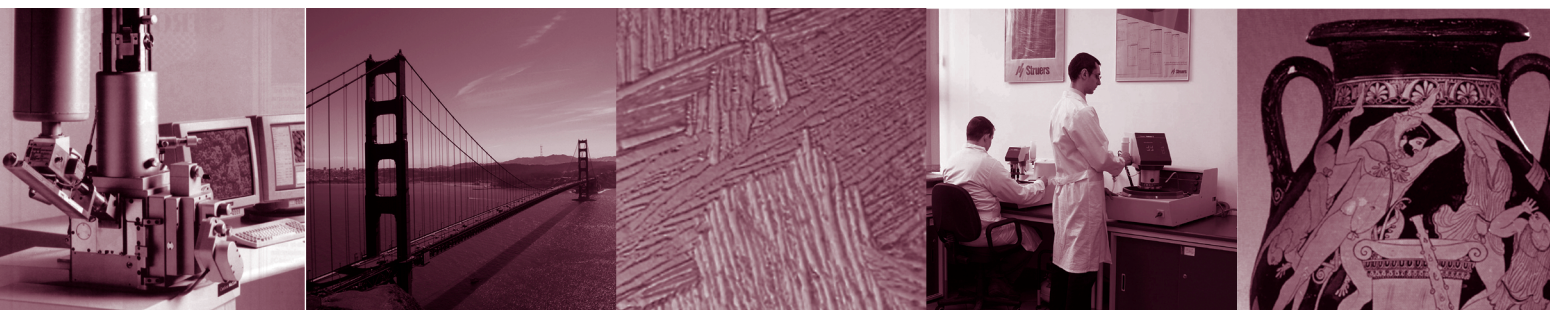




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## It was said...



**Prof. Michał Kleiber Dr hc**  
**Full Member of the Polish Academy of Sciences**  
**President of the Polish Academy of Sciences**

„(...) Last decades brought (...) unusually dynamic, rare in so far history increase of importance of knowledge as a fundamental carrier of development – civilisational and economic ones.(...) My humorous definition of the society of knowledge is such: it is the society which today prepares the conditions so that tomorrow the innovative products and services which yet yesterday nobody thought about can be made... and lots of which can turn out completely useless ones the day after tomorrow. The definition is to illustrate the tragedy of making strategic developmental decisions in conditions of huge uncertainty towards their final effect – need of investing basing on knowledge, made by its absolute competition, creativity of the society which indeed does not guarantee the success of each taken initiative but as a strategy it is the best guarantee of stable development. It is just nature of broad and common knowledge, naturally, a very risky one (...) Let's divide knowledge into two types. First of all, one can tell about knowledge which exists somewhere and is (more easily or difficult) available. The problem is how to reach and use it. Such knowledge can be achieved in two different ways. For example patents or licenses can be bought, knowledge can be gained through studying scientific literature, the access to knowledge can be gained by making various types of partner agreements with people or institutions having knowledge which has not been available so far. (...) The second type of knowledge is new one which can be achieved as a result of own scientific researches. One should not make a conclusion that the creation of new knowledge is useless – just opposite – from the fact that there are lots of gathered knowledge which cannot be used. First of all, human need to understand deeper the world and the processes ruling it causes that significant financial resources should be sacrificed on researches which do not have a direct practical aim. Those researches called cognitive ones fulfill human curiosity, develop creativity and are key ones for the process of the university education. It is legitimately considered that the range of researches carried out in a given country goes to show its far-reaching wisdom and civilisational level. The other important type of research activity are researches carried out in the context of foreseen applications – often knowledge which is necessary at this moment does not exist at all, in other cases available resources require fundamental completions and broadening. (...)

The interview with a Social Advisor of the President of the Republic of Poland in November 2006.



# Editorial

Lately in the Polish scientific society a vivid discussion about the possible ways of a scientific career has been made. Those academic teachers who are at present in a position of full professors in Polish Universities usually overcame requirements at the age over 50, although some of them were over 60, and even ca. 70, however some happened to be at the age of 35-40. The system of the promotion of Polish academic teachers is then a subject of numerous analyses. People who disagree with it, and there are lots of them and mainly they are young ones, who have not reached tops of academic careers, estimate that in the majority of cases it delays the course of a career or even limits it. Too many stages of that career and time - and energy-consuming efforts made by candidates to overcome administrative requirements concerning the achievements of successive degrees, titles and academic positions are critically emphasised. The need of a habilitation, the existence of the Central Commission for Degrees and Titles and the conferring of a title of a professor by the President of the Republic of Poland are questioned. There are also accusations that it is a cooperative system, not available for the promotion of people who are immodest and avoid a coterie. However, an example of some countries in which making a PhD thesis and gathering a given number of publications is enough to take a position of a Rector of a mother University can be given as a paragon. It is simple and allegedly effective and probably it is not important that weak and unrecognised universities give those positions to weakly prepared candidates. In turn followers of the existing system support it, emphasising that it ensures clear criteria of a scientific promotion, requirements concerning a degree of a habilitated doctor just equal enough in the whole country thanks to the supervision of the Central Commission for Degrees and Titles, which guarantee to keep a common high level of requirements, and the conferring of a scientific title of a professor of science by the President of the Republic of Poland is an ennoblement for the whole scientific society and especially for nominated candidates. It is emphasised that the aim of activities of good scientists is to find truth and make scientific researches and in the consequence broad publication of their results in international scientific journals and not loss of time to overcome successive stages of a scientific carrier. It happens in their case somehow by chance.

Who is right? Surely, the one and the others. Each of them has his/her own experiences. While the first approach in extreme cases can lead to a reduction of requirements and admitting people unsuitably prepared to independent scientific activeness and in the consequence to mistakes in the creation of a young scientific cadre, the second one as conservative can limit young researchers and discourage them to academic carriers, however, not letting by many trials to a groundless promotion of people who have found themselves by chance in a scientific society.

Those who have got to science, particularly do not mind of any of those models. One can carry out interesting researches, publish their results and on their basis make a PhD thesis and then a habilitation and a visit in the President Palace, most often in the company of the closest relatives can surely be an important event in a history of a family. However, there should be no other additional requirements and difficulties in taking academic positions. Moreover, it is worth taking into consideration, analogically to other cases when a nomination is given by the President of Polish Republic (eg. judges, generals), the consequent introduction for titular professors of the retirement (keeping a full salary) after the end of their professional carrier, not the necessity of dismissing them from work when they achieve the pensionable age. The discussion lasts, and a legislator should finish it by making a clear-cut and durable law.

Lately, from the initiative of the Ministry of Science and Higher Education the range of that discussion has been broadened. For at least 15 years the basic stream of young candidates for scientific societies have been participants of PhD studies. The three-level uniform way of education having being introduced for a few years in the whole Europe include those studies as the third stage of education. At present in Poland over 30 thousand people study at PhD studies and it is assumed that during next years their number can be increased to 100 thousand. Surely it requires also special and detailed analyses. While earlier this type of studies was regarded as an elitist one, now and especially in the nearest future their egalitarianism requires new solutions.

It is sure that not all their graduates will find an occupation in a scientific society, so it becomes obvious that making a PhD thesis, confirming a scientific degree, cannot be their aim. It has been settled that graduates achieve a certificate confirming the graduation from those studies and not necessarily must make a scientific PhD thesis.

What are then reasons of undertaking such studies? On the one hand given persons want to raise a level of their own education and increase personal chances on a job market. On the other hand an individual economic entity operating on that market makes a selection of candidates to more difficult professional tasks, seeking for graduates who are the best educated and prepared for that aim. In the 19<sup>th</sup> century a French philosopher, a creator of sociology and one of main representatives of French positivism, Auguste Comte worked out fundamentals of divisions of science into disciplines. Surely it was conducive to its development. At the same time it became the reason of the creation of numerous fields of knowledge between disciplines which development was neglected in many cases. It is certainly one of reasons of dynamic undertaking of inter- and multidisciplinary scientific problems in the 21<sup>st</sup> century. In turn it must be reflected in a subject matter of undertaken third-level PhD studies.

So there is a problem - whether educate broadly and interdisciplinary, and thanks to that superficially or just opposite - narrowly and deeply? It seems that it is not an alternative. One of an ancient philosophers Lucius Annaeus Seneca Philosophus used to say



"Learn, not to know more, but to know better". It surely deals with all scientists, so those who make PhD theses in order to begin an academic career and confirm their scientific competence. One can imagine certainly without any problem that third-level studies can prepare other participants to engineering, manager, industrial activeness or the ones in state and local administration, military or diplomacy. It may deal also with education of persons with very high competences to perform a mission having important meaning for interests of the country and the society. In those cases high qualifications do not require a confirmation through the achievement of a scientific degree.

Having such an approach one can agree with an egalitarian character of PhD studies and at the same time one can point out the area for elitist education for outstanding graduates from the second-level studies. On the hand it deals with scientists who develop creatively their abilities and competences by active participation in scientific researches and at the same time have essential input to the development of scientific discipline they go in for achieving a scientific degree of a doctor of philosophy. On the other hand those who can be prepared to hold important missions requiring interdisciplinary education can participate in practical activities in a chosen area of activeness proving the preparation to take independent activities and full responsibility for their results. It is of course other diploma than a doctorate in the field of science (confirming the achievement of a scientific degree), although equivalent, confirming high competence outside the sphere of science and scientific researches and achieving a suitable professional degree. There is already a precedent. Yet a doctorate in arts has been established. It is necessary to act analogically, establishing doctorates in other disciplines eg. state administration, diplomacy, military, engineering, industrial and manager activeness, not calling them, however, a scientific degree, and reserved for graduates of third-level studies, who made a suitable work (however not a scientific one) authorising to the achievement of such a high professional degree.

The best graduates among mentioned groups will become elites. It is necessary to support them in taken activities by suitable and preferential, but a competitive system of grants, scientific and professional stages and the access to multidirectional education in the country and abroad, however without a segregation for better and worse yet at the beginning of the third-level studies, but after showing their sufficient enough achievements during their duration.

It seems that an existing network of academic universities and scientific institutions is enough to take such activities without the need of the creation of special and new institutions for that aim. However, it is necessary to take into consideration which of those units will achieve rights for conferring suitable professional degrees connected with the graduation from the third-level studies and what administrative unit of the State will give those rights.

A problem is interesting, innovative and surely is worth vivid discussing in the scientific society. Such a discussion has been taken in the forum of the Main Board of Higher Education. I encourage also the Readers of our Journal to the participation in it and count on a vivid reply. Our Journal is at a disposal of the Readers, especially in relation to the third-level education in the field of materials science and engineering.

A handwritten signature in black ink, appearing to read 'Leszek A. Dobrzański'.

Prof. Leszek A. Dobrzański Dr hc  
Editor-in-Chief of the AMSE

Gliwice, in March 2007

# Thematic scope of papers

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Metallic Alloys, Tool Materials, Superplastic Materials, Ceramics and Glasses, Composites, Amorphous Materials, Nanomaterials, Biomaterials, Multifunctional Materials, Smart Materials, Engineering Polymers

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Ductility, Crack Resistance, Fatigue, Creep-resistance, Fracture Mechanics, Mechanical Properties, Electrical Properties, and Magnetic Properties, Corrosion, Erosion, Wear Resistance, Non-Destructive Testing, Reliability Assessment, Toxicity, Working Properties of Materials and Products

## **METHODOLOGY OF RESEARCH, ANALYSIS AND MODELLING**

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Electron Microscopy, X-ray Phase Analysis, Metallography, Quantitative Metallography, Image Analysis, Computer Assistance in the Engineering Tasks and Scientific Research, Numerical Techniques, Statistic Methods, Residual Life Analysis, Process Systems Design, Mould Flow Analysis, Rapid Prototyping, CAM, CAMS, CAQ, Engineering Design, Technological Design, Materials Design, Computational Material Science, Materials and Engineering Databases, Expert Systems, Artificial Intelligence Methods

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## **EDUCATION AND RESEARCH TRENDS IN MATERIALS SCIENCE AND ENGINEERING**

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Development of New Curricula for BSc, MSc and PhD Studies, Challenges of the Widening Labour Market, Complementary Roles of Developed and Developing Nations in Promoting a Global Industrial and Economical Infrastructure and Requirements on Common International Research and Teaching Development, Computer Aided Teaching, E-learning

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