

CERAMICS IN A SELF-SUSTAINING ENVIRONMENT DISCUSSED AT THE 2ND FORUM OF THE ACADEMY OF CERAMICS

ACADEMY PRIZE WINNERS AWARDED

The second Forum of the Academy has been organised in Cracow (Poland) from June 12th to 16th 1996 under the motto *"Role of Ceramics in a Self-Sustaining Environment"*, which realises the main vocation of the Academy, i.e. fostering an understanding by the society of the social impact and cultural influence of ceramic science, technology and art.

This follows the Forum held in Assisi (Italy) in 1992 under the topic *"Ceramics and Society"*, whose official book encompassing both the lectures and the discussion has been published by Techna Editr. in the year 1995.

The first day's session was honoured by the presence of the Rector of the University of Mining and Metallurgy hosting the Forum, Prof. Dr. M. Handke, the



Cracow, University of Mining and Metallurgy, Akademia Górniczo - Hutnicza.

Vicepresident of the City of Cracow, Dr. J. Banaś, the President of the Polish Academy of Sciences and Learning, Prof. Dr. K. Kowalski, the President of the Cracow Branch and Vicepresident of the Polish Academy of Sciences, Prof. Dr. W. Ostrowski. After addresses by the Chairman of the Academy Council, Dr. Pietro Vincenzini (Italy), the acting President of the Board of the Academy and co-organiser of the 2nd Forum Prof. Dr. Roman Pampuch (Poland), and after a lecture commemorating the late President of the Academy, Prof. M. McLaren, given by Dr. Dale Niesz, USA), the winners of the International Ceramic Prizes '96 for outstanding innovations were presented by Prof. Dr. R.E. Newnham (USA), the

chairman of the Ceramic Prize Screening Committee.

The winners are as follows:

Dr. Filippo Marazzi (Gruppo Marazzi SPA, Sassuolo, Italy), in recognition of the important technological innovations introduced by the Gruppo Marazzi in the field of ceramic wall and floor tiles, specifically the development and integration into production of a single fast fired glazed tile using a monolayer rolled kiln; this innovation is a major advance in modernisation of ceramic tile production, which will also be of use in other areas of the traditional ceramics industry.

Dr. Joseph Recasens (Société Européenne des Produits Réfractaires, Le Pontet, France), for his significant achievements in the development of innovative refractory products, especially alumina-zirconia-silica fused cast refractories, fused cast beads, and

zirconia powders.

Dr. Rodney Bagley and Dr. Irwin R. Lachman (Corning Inc., New York, USA) for their invention of the process of extruding honeycomb ceramics, which made possible the use of monolithic catalytic converters for the reduction of automotive exhaust emissions - perhaps the single most successful commercial use

of advanced ceramic products (other than for electronic applications), and now used in over 95% of cars equipped with catalytic converters (the equivalent of over 500m honeycomb substrates in the last two decades).

Mr. Isao Oda and Dr. Minoru Matsui (NGK Insulators Ltd, Nagoya, Japan) for their important contribution to the advancement of structural ceramic product innovation and implementation, specifically the development of the ceramic turbo-charger rotor, the first high speed rotating ceramic product introduced successfully into the automotive market.

All the Prize winners gave lectures in which the features of their main achievements were presented.

The second and third day sessions, inaugurated by an address given by Prof. Dr. Ostrowski, were consecrated to invited lectures, related to



A general view of Cracow University of Mining and Metallurgy that hosted the 2nd Forum of the Academy of Ceramics.

the motto of the second Forum and a discussion. The following lectures were presented:

"Materials & Society", by Dr. G. Lanzavecchia, former adviser of the Ministry for University and Research of Italy;

"Goals of Materials Science and Engineering", by Prof. Dr. M. Grabski, Warsaw University of Technology (Poland), President of the Polish Science Foundation;

"Industrial Ecology" by Dr. R. Laudise, AT&T Bell Laboratories (USA), member of the American Academy of Sciences;

"Links between Science and Industry" by Prof. Dr. F. Aldinger, Director, Max Planck Institute, Stuttgart (Germany);

"Ceramics and the Environment" by Prof. Dr. R. M. Spriggs, Director, Center for Advanced Ceramic Technology, Alfred University (USA);

"Energy-Saving Technologies" by Prof. Dr. A. Merzhanov, Director, Institute of Macrokinetics, Russian Academy of Sciences (Russia);

"Standardization in Ceramics" by Dr. T. Kanno, Adviser for Ceramics, International Standards Organisation, Asahi Glass Co. Ltd. (Japan);

"Quality of Life as a Criterion for the Selection of Research" by Prof. R. Brook, University of Oxford (UK).

The sessions were chaired successively by: Prof. R.M. Spriggs (USA), Prof. H. Hausner (Germany), Prof. R. Pampuch (Poland), Prof. W.D. Kingery (USA), Prof. M. Ruehle (Germany) and Prof. N. Claussen (Germany).

In the Second Forum of the Academy took part sixty-four Academy Members and their guests, seven Ceramic Prize '96 winners, and fifteen representatives of Polish Science and Industry. The proceedings of the Forum, including the lectures and discussion, shall be published in an official book of the Forum; the



Prof. Roman Pampuch, Acting President of the Advisory Board for Science of the Academy of Ceramics, during the opening Session of the Forum. Prof. Pampuch and his team of the Cracow Academy of Mining and Metallurgy held the full responsibility of the organization of the Forum.

material for its printing shall be ready at the end of 1996.

The scientific sessions were accompanied by a social programme, in which the rich, over one thousand year's old, heritage of Cracow, the former Royal Capital of Poland and site of the second, after Prague, University in Central Europe, has been revoked. This programme included, besides a visiting of the mediaeval Market Place, Collegium Maius of the Jagellonian University (14th Century) and the Royal Castle, an excursion to a unique in the world underground Salt Mine in Wieliczka (dating from the 12th century), and a concert of music in the Cloth Hall of Cracow, performed by the famous Cracow



The Academy Forum was sponsored by a number of leading Polish scientific institutions. Prof. Dr. Ostrowski, the President of Cracow Branch and Vice-President of the Polish Academy of Sciences, during his welcome address. The Forum was held in the Main hall of the University of Mining and Metallurgy, the leading center in Poland for ceramics and materials research.

Chamber Choir and Orchestra. The participants and their guests took part in the Official Dinner of the Forum which took place on June 14th in the historical "Wierzynek" Restaurant (14th century).

A realisation of the rich programme of the Forum would be not feasible without a financial and organisational support by: the University of Mining and Metallurgy, Cracow, the Polish Committee of Scientific Research, the Academy of Ceramics, the Skawina Refractories Ltd., Skawina (Poland), the Compagnie de Saint-Gobain, and by Corning Inc., USA.

WELCOME ADDRESS BY ACADEMY COUNCIL CHAIRMAN

«Mr. President, Authorities, dear colleagues and honorable guests; it

is a privilege and an honor, on behalf of the Academy Council to ex-



Dr. Filippo Marazzi, one of the recipients of the 2nd International Ceramics Prize awarded by the Academy of Ceramics for outstanding advancements in the classical ceramics industry, presents his speech on the award topic, i.e. the development of fast single firing of ceramic tiles in monolayer tunnel kiln.



Ing. Mauro Poppi, Member of the Academy Council, presents the Price Diploma to Dr. J. Recasens from Compagnie de Saint Gobain. The prize was awarded to recognize the important achievements of Dr. Recasens in the field of refractory products.

tend to all of you friendly greetings and a most cordial welcome to the 2nd Forum of the Academy of Ceramics.

The Academy was indeed very delighted to follow the kind proposal of colleague Academician Prof. Roman Pampuch for this 2nd Forum to be held in Cracow. Cracow history, culture and heritage, where Romans and Italian Renaissance also left indelible imprints of common feelings, the Jagellonian University, one of the Central Europe's oldest cultural and scientific institutions, the presence of the most important Polish institute for ceramics research and education, joined with the overall pleasant environment of the city that also underwent substantial modernization during the last few years, indeed were felt a suitable combination of features to make Cracow a very congenial seat for the 2nd Forum, an excellent follow up of the Forum held in Assisi on 1992.

The Academy of Ceramics is a very young cultural body founded some nine years ago by action of a small number of Italian companies internationally reknown for the outstanding contribution these offered to the progress of ceramics technology and its diffusion across borders. It is with great pleasure that I welcome the representatives of these companies and Council members who have convened here.

Main objectives of the Academy are of rewarding and honoring those individuals who have made significant contribution to the advancement of the sector, and of promoting progress in the field of ceramics by fostering a better understanding of the close and complex interactions of ceramic technology, economic structure, social organization and cultural beliefs. A complex



Prof. R.M. Spriggs (Alfred University, N.Y., USA) member of the Advisory Board for Science of the Academy of Ceramics and chair at the Opening Session of the Forum presents the Prize Diploma to Dr. Filippo Marazzi (Gruppo Marazzi S.p.A., Sassuolo, Italy).

frame of factors mutually interacting which, for the Academy to accomplish his goals, require contributions from very different disciplines: materials science, anthropology, engineering, social sciences and more. Present prominence of Academy membership from fundamental research and process science, primarily derives for the Class **Science** of Professional Members having been the first to be established. This Academy Class now numbers some 130 individuals selected by way of a strict evaluation procedure which also accounts for a balanced geographical representativeness of countries recognized for their present leadership or their long-standing traditions in ceramics. The other two statutory Classes of Professional Members **Industry and Innovation** and **History and Art** are in progress of being finalized. So, within a reasonable time, it may be expected we will benefit of all re-

quired components useful for the Academy to pursue his objectives. The wide-embracing scopes of the Academy discussions have yet been satisfactorily tested during the Forum in Assisi. There some aspects of the general issues of "Ceramics and Society" were attempted. The two main objectives which had been pursued have been appropriately summarized by Richard Brook in the Forum Proceedings preface. The first was to discuss the theme of the societal context within which developments in ceramics must be made. The ambition was to identify those factors outside the immediate subject of ceramics which could nonetheless influence the extent to which developments in ceramics could be later exploited. The other concentrated on wide-ranging features of ceramic materials themselves which would require attention and advance if their full technological promise was to be

realized.

This 2nd Forum again aims at a further critical insight of the social impact of ceramics technology, sustainable growth being THE challenge for present and future generations. The move of modern societies towards a developmental model with which more importance is attached to the quality of life and more rational use of human and natural resources, indeed has to challenge a number of difficult to control dynamics within a globalized frame of technological, economical, social and ethical constraints. The special role ceramics may play in this context will be object of thorough discussion at this Forum. Recognized experts have been invited to enlighten backgrounds for the debate.

Although in principle there has not been any plan or scope to connect the 2nd International Ceramics Prize of the Academy to the general topic of self-sustaining environ-



USA team from Corning Inc. (Dr. R.M. Lewis, Dr. I.M. Lachman and Dr. R. Bagley) were among the recipients of the 2nd International Ceramics Prize of the Academy for the Advanced Ceramics industry. The Prize Diploma was presented by Dr. Lorian Bocini, Member of the Academy Council (on the right). The Prize recognized the invention of the process of extruding honeycomb cordierite ceramics used for the catalytic reduction of automotive exhaust emissions. Such catalytic converters have been mounted on more than 500 million automobiles during the last two decades.



The Prize Diploma to Dr. I. Oda and Dr. M. Matsui (NKG Insulators, Japan) was presented by Council Member Dr. Roberto Bossetti (SITI S.p.A., Marano Ticino, Italy). The Prize was awarded specifically for the development of the ceramic turbo-charger rotor, the first high speed rotating ceramic product introduced successfully into the automotive market.

ment covered by the Forum, it is noteworthy that almost all innovative processes and products that have been recognized by the Prize appear to contribute to this sort of cybernetic circuit which links together materials, energy and environment. Indeed, fast-firing cycles have really to be felt as a breakthrough for the classical ceramics industry allowing less energy, less labour, less pollution, whereas the ceramic turbocharger rotor and, more, the ceramic catalytic converter mounted in several hundreds million cars in the last two decades are but two outstanding examples of how ceramics can contribute to sustainable growth.

Now, I would like to extend grateful appreciation to all Academy Members and their guests present

here for having granted the Academy with their active involvement. A heartfelt welcome goes to the Laureates of the 2nd International Ceramics Prize all present here to be recognized for their innovative contribution to the progress of the ceramics industry, as well as to the official representatives of respective companies at this Forum.

Special recognition and thanks to Prof. Roman Pampuch and the Local Committee for their dedication in arranging a very stimulating programme of lectures and socials, to Invited Lecturers and to all those Academicians who are actively contributing either in the Academy Boards and Committees or as Lecturers, Session Coordinators or indeed as participants in the discussions of the Forum.

Finally, I would like to give fullest acknowledgements to all those Institutions who have collaborated by way of their sponsorship and support in the organization of the Forum, especially our Polish hosts: the City of Cracow, the University of Mining and Metallurgy and the Polish Academy of Sciences. For the Academy of Ceramics to achieve cross-fertilization of his attitudes the cooperation and involvement of wide-ranging institutions is felt essential. May I trust for all of us a very pleasant stay in Cracow and for the outcome of this Forum to serve the general scopes of our activities".

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