"ACADEMY OF CERAMICS" FIRST FORUM "CERAMICS AND SOCIETY"

Assisi Italy June 26-28, 1992

The first Forum of the International Academy of Ceramics was held in Assisi (Italy), June 26-28 1992, under the patronage of the MURST (Italian Ministry for the University and Scientific and Technological Research), the Umbria Region, and the Municipality of Assisi with a contribution from the CNR (National Research Council) and the ENEA (Italian Commission for Alternative Energy and Protection of the Environment).

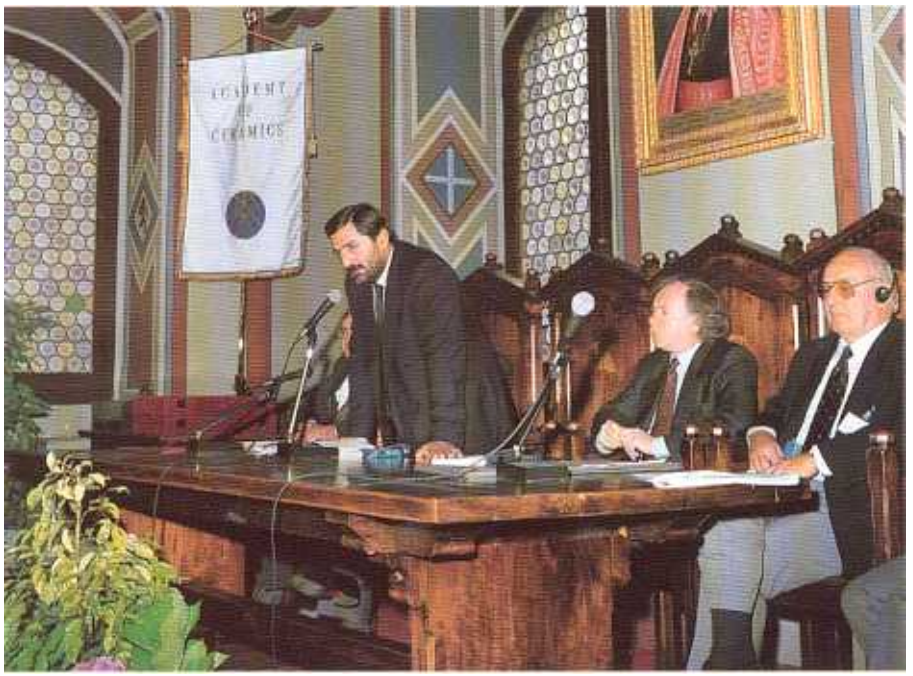
This was the first official event of the Academy of Ceramics, an organization of cultural and scientific import founded in Italy in 1987. Founding Members of the Academy include companies of considerable prestige and importance in the field of the technology and production of ceramics; among these are the Gruppo Bitossi, Marazzi S.p.A., S.I.T.I. S.p.A., Poppi S.p.A. and Techna S.r.l.

The Committee of Honor for the Forum was composed of the Minister for the University and Scientific and Technological Research, the President and Assessor of Culture of the Umbria Region, the Mayor of Assisi, the Presidents of the CNR and ENEA, and the President of the National Committee for Chemical Science of the CNR together with representatives of the companies which are Founding Members of the Academy: Vittoriano Bitossi, President of the Gruppo Bitossi; Adriano Bossetti, President of the S.I.T.I.; Loriano Bocini, President of the Industrie Bitossi '90 and Techna; Filippo Marazzi, President of the Gruppo Marazzi; and Mauro Poppi, President of Poppi S.p.A.

Participation in the Forum of more than half of the Professional Members of the Academy (academicians) representing more or less all the European and non-European countries with significant traditions and activity in the field of ceramics, as regards both research and industrial production, stands as testimony to the truly international nature of the Academy of Ceramics. The active participation in the work of the Forum by many of the "Fathers" of modern ceramic science and technology also served to highlight the concept of the Academy of Ceramics as a focal point of cultural interests in the sector, due to its potential role of addressing questions of general interest as well as an institution of the highest level capable of acting as an interface between cultural, scientific, technological, historical and artistic interests specific to the field of ceramics and analogous interests in other areas of intellectual endeavor. Also present at the 1st Forum of the Academy were the Nobel Prize winners for Physics (High T_c Superconductors), Prof. K. Alex Müller and Prof. J. Georg Bednorz, IBM Zurich, and all Founding Members of the Academy (the only exception being the absence of Dr. Marazzi who was out of the country at that time), as well as a select and qualified group of Italian scientists in the field of ceramics invited for the occasion.

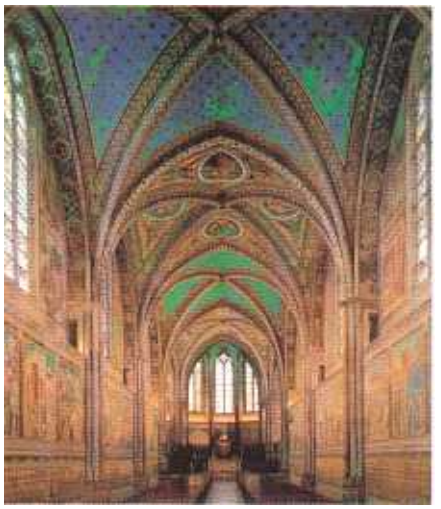
The Municipality of Assisi presented commemorative medals to the Founding Members of the Academy and to other personalities present at the Forum. In the photo, from left to right: G. Vitali, W.D. Kingery, L. Bocini, R. Bossetti, K.A. Müller, P. Vincenzini, M. Poppi, J.G. Bednorz and R.J. Brook.

The inaugural session of the 3-day Forum was held in the splendid "Sala della Conciliazione" of the Assisi Municipal Building. The more strictly technical-scientific sessions of the Forum, reserved to academicians and a very limited number of guest members, dealt with various specific aspects within the framework of the general topic of the Forum, "Ceramics and Society" and were held in the recently modernized hall "Biblioteca Francescana", equipped with the



Vice-Mayor of Assisi, Prof. G. Vitali extends the greetings of the Municipality of Assisi. The choice of Assisi as the location of the first Forum of the Academy was a particularly good one and all the participants were very pleased to have the opportunity to appreciate the numerous cultural, historical and artistic facets of the city. Thanks also to the intervention of the local ATP (Provincial Tourist Agency), it was possible to offer the participants a particularly rich social program. Perhaps the most appreciated event was the performance of the chorus "Cantori di Assisi" organized especially for the academicians and guests in the suggestive setting of the upper Basilica of Saint Francis with its famous frescos by Giotto.

The Assessor for Cultural Activities of the Umbria Region, Prof. Claudio Carnieri, presents the greetings of the Regional Council. Prof. Carnieri also gave a brief talk illustrating the Regional programs regarding research on new materials and in particular cited initiatives of recent activation at the University and at ISRIM.
At the President's table, from left to right: R.M. Spriggs, Alfred University, U.S.A., member of the Board of Trustees of the Academy; P. Vincenzini, C.N.R., President of the Council of the Academy; Giuliano Vitali, Vice-Mayor of Assisi; Claudio Carnieri, Assessor for Cultural Activities of the Umbria Region; W.D. Kingery, University of Arizona, U.S.A., President of the Board of Trustees of the Academy, and R.J. Brook, Oxford University, U.K., Scientific Coordinator of the Forum.



Upper Basilica of Saint Francis.

most advanced audio-visual aids.
Official welcomes were extended to the Members of the Academy by the various Authorities present. In addition, many messages of greetings and best wishes were read, including those from the Minister for the University and Scientific and Technological Research, the Presidents of the CNR and the ENEA, Prof. Luigi Rossi Bernardi and Prof. Umberto Colombo, and the President of the National Committee for Chemical Science of the CNR, Prof. Romano Cipollini.
Opening remarks were presented by Pietro Vincenzini, W.D. Kingery and Richard Brook. Addressing all those present, representatives of the various governmental bodies, academicians, and guests, Dr. Vincenzini, Founding Member and President of the Council of the Academy, in speaking for himself as well as on behalf of the Council expressed pleasure in the presence of such a qualified and highly representative participation in the Forum. At this time, he also gave due recognition to the various individuals and institutions who have made a particular contribution and given their full support to the activities of the Academy.
Prof. W.D. Kingery, President of the Board of Trustees, the highest level technical-scientific Committee of the Academy responsible for advising the Council and the main point of referral for the constitution of the various operating Committees of the Academy, placed emphasis on certain aspects inherent in international activity in the field of ceramics and the role to be played by the Academy of Ceramics as an institution dealing with general questions related to the

R.M. Spriggs presents the Certificate for the *International Ceramics Prize 1992* to R.E. Newnham, Pennsylvania State University, U.S.A. The Prize (to be awarded at 3-year intervals) was instituted by the Academy as a recognition for a contribution of particular importance for its originality, creativity and technological impact in the field of research on new materials and consisted of a Certificate, a work of sculpture (a free interpretation of the Academy logo designed and made by the ceramic artist Sergio Saviotti), and a money award of 20,000 U.S. dollars. The Screening Committee for the Prize was co-chaired by R.M. Spriggs and R. Pampuch (Polish Academy of Sciences, Krakow). Chosen from around 40 candidates from all over the world, R.E. Newnham was awarded the Prize in recognition of his contribution in the field of materials and intelligent systems, and in particular the study, elaboration and application of *"Intelligent Electroceramics"*. Prof. Newnham presented an interesting dissertation on the subject matter for which he was awarded the Prize, illustrating the main developments and future prospects for this field of research.

The First International Ceramics Prize of the Academy of Ceramics Awarded to Robert E. Newnham

The First International Ceramics Prize of the (International) Academy of Ceramics was presented to Robert E. Newnham of The Pennsylvania State University (U.S.A.) at the Academy Forum held in Assisi, Italy, June 26-28, 1992. The award citation reads: *"For distinguished, creative and exceptional interdisciplinary contributions to the advancement of ceramic science and culture, especially in composite electroceramics including Intelligent Ceramics"*. Professor Newnham is Alcoa Professor of Solid State Science at the Materials Research Laboratory of The Pennsylvania State University. He is also affiliated with the Ceramic Science Section of the Materials Science and Engineering Department. He holds a Bachelors of Science (B.S.) degree in mathematics from Hartwick College, a Masters of Science (M.S.) from Colorado State University, a Doctor of Philosophy (Ph.D.) degree in physics and mineralogy from Penn State and a Ph.D. in crystallography from Cambridge University. Prior to joining the Penn State faculty in 1966, he taught at the Massachusetts Institute of Technology. His interests include structure-property relations, electroceramics, and composite materials for electronic applications. Newnham is the author of more than 300 research papers in his field. He also currently serves as co-editor of The Journal of the American Ceramics Society. A Fellow of the American Ceramic Society, he holds membership in the Electronics and Basic Science Divisions and the Ceramic Educational Council (CEC). He was named Outstanding Educator in Ceramic Engineering in 1990. Professor Newnham has received numerous honors and awards for his contributions to ceramic science, technology and education. In 1991, he received the John Jeppson Medal of ACerS, and the 1989 Edward C. Henry Award of the Electronics Division of ACerS. He delivered the ACerS's Edward Orton Jr. Memorial Lecture in 1987. Penn State has honored Dr. Newnham with the Wilson Teaching Award and the Faculty Scholar Medal for his work on composite electroceramics. He has also been elected to membership in the (U.S.) National Academy of Engineering, as well as the (International) Academy of Ceramics.

Mauro Poppi, Founding Member of the Academy and President of the Acimac, presents the official recognition of the Academy to R.E. Newnham.

combination of scientific, technological, historical and cultural interests of the ceramic sector in general and in particular in those areas where the interactions of ceramic technology, science and art with social and economic development are most evident.
Prof. Brook, President of the Scientific Committee of the Forum, concluded the opening remarks with a brief illustration of the general objectives of the Forum and the guidelines followed for the selection of the to-

K. Alex Müller, "Distinguished Member" of the Academy of Ceramics

K. Alex Müller received the PhD in Physics at the Swiss Federal Institute of Technology in 1958. After spending five years with Battelle Institute in Geneva as a project manager, he joined IBM Zurich Reserach Laboratory, Rüschlikon, Switzerland in 1963, where he continued to work in solid-state physics. K. Alex Müller was appointed Lecturer in 1962, Titular Professor in 1970 and Professor of the University of Zurich in 1987. He is the author of over 200 technical publications and member of the Executive Committee of the Groupement Ampère and the Ferroelectricity Group of the European Physical Society. He is also Fellow of the American Physical Society, member of the Swiss Physical Society and the Zurich Physical Society which he presieded in 1968/69. He was Manager of the Physics Department of the IBM Zurich Research Laboratory from 1973 to 1985. In April 1982 he was appointed IBM Fellow. Since summer 1985 he has devoted his time exclusively to research with his own fellowship group. His present interests are fundamental aspects in the discovery of a high-T_c superconductor. In June 1987 Professor Müller received the honorary degree of Doctor of Science of the University of Geneva, Switzerland, in July that of the Faculty of Physics of the Technical University of Munich, West Germany, in November that of the Università degli Studi di Pavia, Italy, beginning February 1988 that of the University of Leuven, Belgium, on February 11, 1988 that of the Boston University, on May 29 that of the Tel Aviv University, Israel, on November 15, 1988 that of the Technical University of Darmstadt, West Germany, on March 8, 1989 that of the University of Nice, France, on May 12 that of the Universidad Politecnica, Madrid, Spain, on June 28, 1990 that of the University of Bochum, FRG, and on November 12 that of the Università degli Studi di Roma, Italy. At the beginning of May 1989 Professor Müller was appointed Foreign Associate Member of the Academy of Sciences of the United States. On occasion of the 2nd International Superconductivity Symposium in Tsukuba, Japan, he received the Special Tsukuba Award on November 15, 1989. Together with Dr. J. Georg Bednorz, he is corecipient of the Thirteenth Fritz London Memorial Award 1987 (presented by the Fritz London Memorial Award Committee, University of California, Los Angeles); the Dannie Heineman Prize 1987 (awarded by the Minna James Heineman Stiftung, Academy of Sciences Göttingen, West Germany), and the Robert Wichard Pohl Prize 1987 (conferred by the Prize Committee and the Steering Committee of the German Physical Society); the 1988 Hewlett-Packard Europhysics Prize; the Marcel-Benoist Prize 1986 conferred by the Marcel-Benoist Foundation, chaired by Flavio Cotti, Member of the Federal Council; the Nobel Prize in Physics 1987; the 1988 APS International Prize for New Materials Research, and the Minnie Rosen Award, conferred by the Ross University, New York. In 1992 he has been appointed Distinguished Member of the Academy of Ceramics.

pics of the various sessions.
The inaugural session of the Forum also included two important moments of celebration: conferment of Distinguished Membership in the Academy to Professors Müller and Bednorz and the presentation of the International Ceramics Prize 1992, established by the Academy, to Prof. R.E. Newnham.
These first two Distinguished Memberships in the Academy are related to the discovery of superconductivity at high critical transition temperatures. Because of the widespread attention accorded by the mass media, everyone, even those not working in the field, knows about the discovery in mid-1986 of what has been hailed as the most important advancement in solid state physics in the last decade, that is, the intuition, followed by experimental verification, of the superconductivity of certain families of mixed ceramic oxides, at temperatures higher than that of liquid helium. This discovery has already been widely recognized at an international level with honors and awards of the highest prestige, among these the Nobel Prize.
It was thus the desire of the Academy of Ceramics, which already counts the two discoverers of high temperature superconductivity among its Professional Members, to give them due recognition within the framework of the Forum by making them the first Distinguished Members of the Academy.
Certificates of Distinguished Membership in the Academy of Ceramics

Loriano Bocini, representing the Industrie Bitossi 90 S.p.A. and the Gruppo Editoriale Techna S.r.l., both Founding Members of the Academy, presents the official recognition of the Academy to Prof. Müller. The ceramic plaque, representing a free interpretation of the Academy logo is the work of Carlo Zauli and Remo Tampieri.

were presented to Prof. Bednorz and Prof. Müller by Prof. Kingery, President of the Board of Trustees. Plaques, representing a free interpretation of the Academy logo designed and made by the well-known Faentine ceramic artists, Prof. Carlo Zauli and Prof. Remo Tampieri were presented to Professors Müller and Bednorz by Dr. Roberto Bossetti and Dr. Loriano Bocini, both Founding Members of the Academy. Professors Müller and Bednorz then each gave a brief talk in which they focused attention on various important points for the promotion of a better understanding of the phenomena involved in high temperature superconductivity, on the critical factors inherent to the transport properties of polycrystalline materials which must be overcome in order to render various characteristics more suitable for the possible applications, and on the strong points of ceramic superconductors which make it possible to foresee a variety of uses which up until now have been only partially explored.

The conferment of the Distinguished Memberships was followed by the presentation of the International Ceramics Prize 1992 to Prof. R.E. Newnham.

The International Ceramics Prize (to be awarded at 3-year intervals) was instituted by the Academy as a reward for significant advancements and realizations of the intellect in one of three categories: RESEARCH - INDUSTRY and INNOVATION - ART and HISTORY.

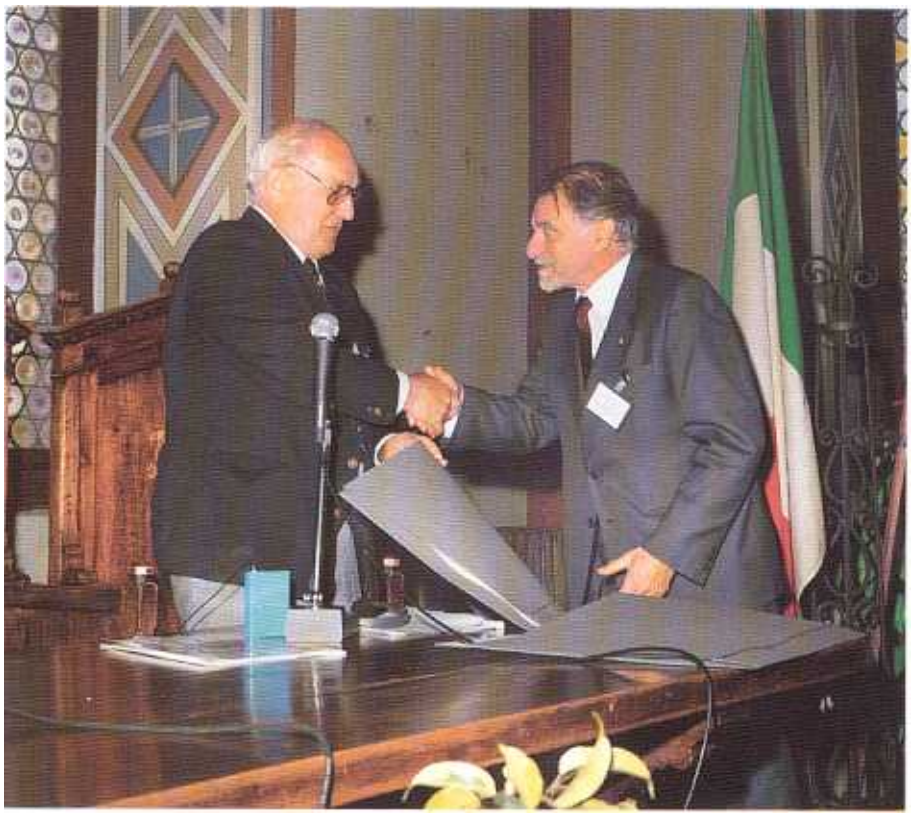
The International Ceramics Prize for 1992, designated to the category of RESEARCH, was awarded for a contribution of particular importance for its originality, creativity, and technological impact. The Prize consisted of an artistic Certificate (produced with an etching technique) containing the motivation for award of the prize, a work of sculpture, this too a free interpretation of the Academy logo designed and made by the well known Faentine ceramic artist Prof. Sergio Saviotti, and a money award of 20,000 U.S. dollars.

The motivation for assignment of the International Ceramics Prize 1992 was read by Prof. Spriggs, President (together with Prof. Roman Pampuch, Polish Academy of Sciences, Krakow) of the Screening Committee for the Prize. Chosen from around 40 candidates from all over the world, Prof. Robert E. Newnham was awarded the Prize for his interdisciplinary contribution of distinct originality and creativity in the field of materials and intelligent systems, and in particular "Intelligent Electroceramics".

J. Georg Bednorz, "Distinguished Member" of the Academy of Ceramics

Johannes Georg Bednorz is IBM Fellow at the IBM Zurich Research Laboratory. He completed his undergraduate studies at the University of Münster in 1976, and received a Ph.D. degree from the Swiss Federal Institute of Technology in Zurich in 1982. He joined the IBM Zurich Research Laboratory in 1982 as a Research Staff Member and was appointed IBM Fellow in 1987. Dr. Bednorz's research activities involve preparation, crystal growth and characterization of high refractive oxide materials (phase transitions, quantum ferroelectricity), oxides with metallic conductivity and superconductivity, and development of high T_c superconductors. Together with Professor K. Alex Müller, he is corecipient of the Thirteenth Fritz London Memorial Award 1987 (presented by the Fritz London Memorial Award Committee, University of California, Los Angeles); the Dannie Heineman Prize 1987 (awarded by the Minna James Heineman Stiftung, Academy of Sciences Göttingen, West Germany); the Robert Wichard Pohl Prize 1987 (conferred by the Prize Committee and the Steering Committee of the German Physical Society); the 1988 Hewlett-Packard Europhysics Prize; the Marcel-Benoist Prize 1986 conferred by the Marcel-Benoist Foundation, chaired by Flavio Cotti, member of the Federal Council; the Nobel Prize in Physics 1987; the 1988 APS International Prize for New Materials Research, and the Minnie Rosen Award, conferred by the Ross University, New York. He is also recipient of the 1987 Viktor Moritz Goldschmidt Prize awarded by the German Mineralogical Society, and the Otto-Klung Prize 1987 awarded by the Otto-Klung Foundation, Free University of Berlin, West Germany. In 1992 he has been appointed Distinguished Member of the Academy of Ceramics.

Roberto Bossetti, representing the Founding member S.I.T.I. S.p.A., presents the official recognition of the Academy to Dr. Bednorz.



K. Alex Müller, IBM Zurich, Noble Prize winner in Physics (High Critical Transition Temperature Superconductors) receives the Certificate of Distinguished Membership in the Academy from W.D. Kingery. At the same time, Distinguished Membership in the Academy was also conferred on Georg Bednorz, IBM Zurich, winner of the Nobel Prize together with Prof. Müller.

P. Vincenzini, President of the Council of the Academy of Ceramics, during his brief opening remarks at the inaugural session of the Forum, held in the "Sala della Conciliazione" of the Municipal Building of Assisi. More than half of the 108 academicians coming from all over the world participated in the Forum.

Ing. Mauro Poppi, Founding Member of the Academy and President of the Italian Association of Producers of Machinery and Equipment for the Ceramic Industry, presented the Prize.

Prof. Newnham then gave an interesting dissertation on the subject matter for which he was awarded the Prize.

The inaugural session concluded with refreshments offered by the Municipality of Assisi and a guided tour of the Basilica of Saint Francis.

The technical sessions of the Forum, reserved to academicians and a limited number of invited guests, were focused on the following topics:

- The new social-economic context of technology: opportunities and problems
- Priorities for the development of ceramics: ceramic technology
- Bioceramics
- Ceramic education
- Future role of the Academy of Ceramics

Each session included two invited lectures, a tutorial lecture, general communications and free discussion. The Invited and Tutorial Speakers were as follows: Prof. R. Roy, Pennsylvania State University (U.S.A.); Prof. R.J. Brook, Oxford University (U.K.); Prof. H. Hausner, THU Berlin (Germany); Prof. W.D. Kingery, University of Arizona (U.S.A.); Prof. H. Yanagida, University of Tokyo (Japan); Prof. Y. Tretyakov, Moscow State University (Russia); Prof. L. Hench, University of Florida (U.S.A.); Prof. T. Kokubo, Kyoto University (Japan); Prof. H. Heuer, Case Western Reserve University (U.S.A.); Prof. G. Petzow, Max Planck Institute (Germany) and Prof. L. Gauckler, ETH Zurich (Switzerland).

This rich technical-scientific program was complemented by an interesting social program open to all academicians and their accompanying persons and guests. These activities included guided visits to Assisi, Perugia, Orvieto, and Gubbio, a concert by the chorus "Cantori di Assisi" held in the suggestive setting of the Upper Basilica of Saint Francis, as well as the Closing Banquet of the Forum. In this way participants in the Forum were able to gain full appreciation of the various cultural and historical aspects of the Umbria Region as well as the exquisite hospitality of the people of this region.

The Proceedings of the Forum, including the wide-ranging discussions which followed the various communications, will be made available to the international scientific community as soon as possible.