

Proceedings of the International Conference
SUBSTRATE CRYSTALS
AND
HTSC FILMS' 96
Jaszowiec, Poland, September 16–20, 1996

organized by

Institute of Electronic Materials Technology, Warsaw

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Institute of Physics, Polish Academy of Sciences, Warsaw

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Institute of Crystal Growth, Berlin

under auspices

Polish Crystal Growth Society

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German Crystal Growth Society

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PREFACE

The discovery of high-temperature superconductivity in multicomponent cuprates in 1986 aroused hope about their wide application. Shortly afterwards their layers found several applications in electronics. A condition for obtaining good-quality layers is the choice of substrate from the standpoint of its structural and physical properties. Initially crystals with significant mismatch of structural parameters were used as substrates. With the application of appropriate transition (buffer) layers and by applying physical methods of their deposition, these substrates fulfil in a narrow range their role even today. However, the search of suitable substrates for the deposition of these layers has begun since 1988 in several centres (Philips in Hamburg, Germany, and Bell Lab., USA). In the "European Conference on High- T_c Thin Films and Single Crystals" organized in 1989 in Ustron in Poland the results of investigations of physical properties and crystallization of high-temperature superconductors were presented. There, attention was drawn to the important role of substrates in the technology obtaining layers and the first results on the elaboration of a new group of compounds with a K_2NiF_4 -type structure of the general chemical formula $ABCO_4$ were presented. The first results on the crystallization and properties of the deposited layers belonged to the most stable compound $CaNdAlO_4$ of this group. Thereafter several centres of the world in USA, Canada, Japan and Germany have undertaken investigations and preparation of other crystals of this group and others, and deposition of layers.

During September 16–20, 1996, the "International Conference on Substrate Crystals and HTSC Films" was organized in Jaszowiec in Poland. The aim of the conference was to sum up the present-day studies and to discuss broadly the problems dealing with substrates (single crystal)–interface–layer, the conditions of their growth and the relationships between physical properties associated with them. Attention was drawn to finding new materials and the significance of the understanding of the substrate defect structure, especially under the conditions of layer deposition, was emphasized.

In the above area the long standing collaboration between Polish (Institute of Electronic Materials Technology, ITME, and Institute of Physics, Polish Academy of Sciences, IF PAN) and German institutes (Institute of Crystal Growth, IKZ, and Solid State Max-Planck Inst., FKF MPI) formed the initiative for the organization of this conference. The conference was organized with financial support

of Polish (State Committee for Scientific Research, KBN, Committees of Physics and Crystallography of Polish Academy of Sciences, PAN, and Institute of Electronic Materials Technology, ITME) and German organizations (Foundation of Polish-German Cooperation, F P-N). In all eighty five participants from different countries took part in the conference. We express our thanks to all the participants, especially to the invited speakers, for their presence and active participation in the conference.

Anna Pajączkowska
and Winfried Schröder
Conference Chairpersons

List of Invited Speakers

A.S. Bhalla (Univ. Park, USA)
C.D. Brandle (Murray Hill, USA)
H.U. Habermeier (Stuttgart, Germany)
A.R. Kaul (Moscow, Russia)
H. Kinder (Munich, Germany)
J.P. Krumme (Hamburg, Germany)
J.-P. Locquet (Zürich, Switzerland)
M. Manzel (Jena, Germany)
S. Miyazawa (Kanagawa, Japan)
T. Morishita (Tokyo, Japan)
J.-C. Park (Taejon, Korea)
A. Perrin (Rennes, France)
P. Przysławski (Warsaw, Poland)
P. Reiche (Berlin, Germany)
E.J. Williams (Zürich, Switzerland)
C.F. Woensdregt (Utrecht, The Netherlands)