

Final Report

The 33rd IUVSTA Workshop “Diamond, Diamond Like Carbon, Carbon Nanotubes, Nitrides & Silicon Carbide”

The 33rd IUVSTA workshop on “Diamond, Diamond-Like Carbon, Carbon Nanotubes, Nitrides and Silicon Carbide” was held November 28-30, 2001 in Campos do Jordão City, Hotel Leão da Montanha, Brazil. The IUVSTA workshop was held in conjunction with the IV Brazilian Conference on this topic. The workshop had an international flavor with invited speakers from around the world including England, Taiwan, France, Brazil and the USA. The small city of Campos do Jordão proved to be an ideal setting for a workshop with an intimate working environment for the presentation of the series of invited talks and tutorials by experts in the field along with contributed papers and poster presentations. The city had the appearance of a Swiss village set in a lush tropical environment and provided the perfect background for a meeting in which ample time was provided for extended discussion of the topics.

The topics that were included in the program are listed below:

- * Nucleation and Growth of Diamond thin films
- * Deposition of DLC, SiC, and other carbon-based thin films
- * Nanotube synthesis, characterization, and applications
- * Nanostructure, Microstructure and Characterization
- * Progress in Research, Processing and Applications
- * New Techniques, Sintering Science and Technologies
- * Physical Chemistry Properties and Interfaces

The list of invited speakers and the lectures they provided were:

- S.L.C. Chen, National Taiwan University, Taiwan, “Growth and Field Electron Emission of C- and N-based Nanomaterial”
- O.R. Monteiro, Lawrence Berkeley National Laboratory, USA, “Synthesis, Properties and Applications of Pure and Covalently Doped DLC Films Prepared by Energetic Condensation”
- B.R. Stoner, University of North Carolina, USA, “Applications and Growth Kinetics of Aligned Carbon Nanotubes Deposited Via Microwave Plasma Enhanced Chemical Vapor Deposition”
- O. Shenderova, North Carolina State University, USA, “Multiscale Modeling of Polycrystalline Diamond and Other Carbon-based Systems”
- J.A.H. Jornada, Inmetro-Instituto Nacional de Metrologia, Brazil, “Super-hard Materials and Their Production”
- A. Gicquel, Université Paris, France, “Diagnostics and Modeling of Diamond Deposition from Microwave Plasmas Obtained Under Pulsed Mode”

-A. Fazzio, Universidade de Sao Paulo, Brazil, “Structural and Electric Properties of Carbon Nanotubes with Transition Metal Atoms”

At the end of the meeting a panel discussion of the progress toward applications of diamond and diamond-like carbon was hosted by the invited speakers. Four of the speakers provided a summary of the current state-of-the art in the application areas of electronic, vacuum microelectronic, sensors and hard coatings. There was great interest since the field has held much promise but few companies have been established and survived long term to commercialize the technology. Excellent examples were provided in each of the areas showing that there are specific areas where diamond and related materials have become established in niche markets. However, there was agreement that widespread application in electronic and related fields would not occur with the current state of the technology. Application of diamond-like carbon and nanotubes in the display and vacuum microelectronic field was discussed as the largest and most rapidly emerging field. Two of the attendees presented their newest products, diamond-coated dental drills that received the most acclaim as the product that people wondered why diamond coatings had not been applied in this field earlier.

The workshop was an excellent success and fulfilled all the expectations of the attendees and organizers. In spite of the impact of September 11 on travel throughout the world, the attendance was still in the range of expectations for a IUUVSTA sponsored workshop at 55. Only two of the scheduled invited speakers were unable to attend and one of those was due to a death in the family.

To give credit to all who assisted in the organization of the workshop and to provide a permanent record, the various committees are listed below:

MEETING COMMITTEES

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