

1st International
Industrial Diamond Conference
20-21 October 2005 Barcelona Spain



Diamond
At Work™

Programme

Optical
Chemical
Mechanical
Electrical
Thermal
Electronic

Thursday, October 20th 2005

09:00	Welcoming address: Martin Jennings (Diamond At Work) Opening address and Keynote 1: Christian Hultner (Element Six) Promote growth through innovation: A forward vision for the diamond industry			
Session 1	A: STONE & CONSTRUCTION	B: DIAMOND	C: PCD APPLICATIONS	D: HF ELECTRONICS
09:45	Greene, Egan, Kelly, Nailor, Melody <i>Element Six, Ireland</i> <ul style="list-style-type: none"> Metal coatings on synthetic diamond and their application areas 	Hoshika, Fukunishi, Okanishi, Tanaka, Ishizu <i>A.L.M.T. Corp, Japan</i> <ul style="list-style-type: none"> Ultra precision grinding with fine diamond abrasive wheels 	Murakami <i>OSG Corporation, Japan</i> <ul style="list-style-type: none"> High efficient cutting by diamond tools 	Kasu (<i>guest speaker</i>) <i>NTT, Japan</i> <ul style="list-style-type: none"> Diamond field-effect transistors for RF power applications
	Kompella, Turner, Davidson, Proske <i>Diamond Innovations, USA</i> <ul style="list-style-type: none"> Diamond coatings: a comprehensive study 	Oi, Nishioka <i>Asahi Diamond, Japan</i> <ul style="list-style-type: none"> The development of the diamond CMP conditioner 	Bunting, Garrick <i>Precorp Inc., USA</i> <ul style="list-style-type: none"> Drilling advanced aircraft structures with PCD drills 	Schwitters <i>Element Six, UK</i> <ul style="list-style-type: none"> Diamond-MESFETs - synthesis and integration
	Pyun, Lee, Park <i>Shinhan Diamond, South Korea</i> <ul style="list-style-type: none"> Study for cutting performance in arrayed diamond saw blade 	Suzuki, Iwai, Tanaka, Nimomiya, Sano Uematsu <i>Nippon Institute of Technology, Japan</i> <ul style="list-style-type: none"> Development of high performance grinding wheels with electrically conductive diamond 	Uhlmann, Koenig <i>TU Berlin, Germany</i> <ul style="list-style-type: none"> Machining of Al-MMC with diamond tools 	Kohn <i>University of Ulm, Germany</i> <ul style="list-style-type: none"> Diamond MEMS*
				Yamasaki, Kato, Makino, Ogura, Okushi <i>Diamond Research Centre, AIST, Japan</i> <ul style="list-style-type: none"> Success of n-type doping of (001) orientated diamond and its electrical applications
11:15	<i>Coffee Break</i>			
Session 2	A: STONE & CONSTRUCTION	B: CHARACTERISATION	C: PCD	D: DETECTORS
11:30	Kremshofer <i>Tyrolit, Austria</i> <ul style="list-style-type: none"> Diamond characteristic and performance in wall sawing 	De Pellegrin, Torrance <i>Trinity College, Dublin, Ireland</i> <ul style="list-style-type: none"> Characterisation of abrasive particles and surfaces in grinding 	Pretorius, Bowler, Toomey <i>Element Six, Ireland</i> <ul style="list-style-type: none"> Evaluation of different cutting tool materials for the machining of high strength cast irons 	Bergonzo, Mer, Nesladek, Lardon <i>CEA-LIST, France</i> <ul style="list-style-type: none"> Investigations of high quality diamond detector performances for neutron detection applications
	Chen <i>Beijing Fortune International Diamond Co., China</i> <ul style="list-style-type: none"> Powder catalyst technology applied to diamond production in China 	Novikov, Bogatyreva, Romanyuk <i>V. Bakul Institute, Ukraine</i> <ul style="list-style-type: none"> Expansion of methods for diagnostics of operating characteristics of diamond micron powders 	Deutschendorf, Kountanya, Dyer <i>Diamond Innovations, USA</i> <ul style="list-style-type: none"> Machining of non-traditional materials using PCD 	Morse, Salome, Berdermann, Pomorski <i>European Synchrotron Radiation Facility, France</i> <ul style="list-style-type: none"> CVD diamond for synchrotron X-ray beam monitoring
	Burckhardt <i>Burckhardt-Maschinenbau GmbH, Germany</i> <ul style="list-style-type: none"> Automation in the diamond tool manufacturing industry 	Wagner Pinto, Wegener, Kuster <i>WZL ETH Zurich, Switzerland</i> <ul style="list-style-type: none"> Analysing the grain pattern on brazed bonded engineered grinding tools 	Abele, Schramm <i>PTW TU Darmstadt, Germany</i> <ul style="list-style-type: none"> Towards the possibilities of diamond tools for cutting cast iron 	Sellin, Galbiati <i>University of Surrey, UK</i> <ul style="list-style-type: none"> Performance of a diamond X-ray sensor fabricated with a metal-less graphitic contact
				Casperson <i>Los Alamos National Laboratory, USA</i> <ul style="list-style-type: none"> A space-based application of diamond sensors
13:00	<i>Lunch</i>			
13:45	Keynote 2: Louis Pope (US Synthetic) Switch from carbide to PDC and its impact on the oil drilling industry			
Session 3	A: TOOLMAKING	B: CBN	C: OIL & GAS	D: NEW APPLICATIONS
14:15	Suzuki, Iwai, Sharma, Shiraiishi, Sano, Uematsu <i>Nippon Institute of Technology, Japan</i> <ul style="list-style-type: none"> Application of electrically conductive CVD diamond to a very low wear electrode for EDM 	Breder, Corbin, Chinnakaruppan, Hartline <i>Saint-Gobain Abrasives, USA</i> <ul style="list-style-type: none"> The influence of grinding conditions on the performance of different CBN types 	Scott <i>Hughes Christensen, USA</i> <ul style="list-style-type: none"> The history and impact of synthetic diamond cutters and diamond enhanced inserts on the oil and gas industry 	Butler, Kub, Ancona, Hobart <i>Naval Research Laboratory, USA</i> <ul style="list-style-type: none"> Nanocrystalline diamond films for fabrication of silicon-on-insulator substrates
	Beck <i>Wabawaska, Switzerland</i> <ul style="list-style-type: none"> The use of high-vacuum brazed diamond in tool manufacturing 	Malkin, Shi, Upadhyaya <i>University of Massachusetts, USA</i> <ul style="list-style-type: none"> Grinding performance of electroplated CBN wheels 	Bertagnolli, Vail, Qian <i>US Synthetic/Los Alamos N.L., USA</i> <ul style="list-style-type: none"> High-energy synchrotron X-ray investigation of residual stress/strain and metal distribution in PCD compacts 	Yoshida, Yoshida, Takahashi, Izumi, Seki <i>Sumitomo Electric Hardmetal, Japan</i> <ul style="list-style-type: none"> Electrochemical characteristics of boron doped CVD diamond
	Ardelt, Dermann, Oderbolz, Pollak <i>Saint-Gobain Abrasives, Germany</i> <ul style="list-style-type: none"> Process improvements in PCD insert grinding 	Tuffy, Gallagher, O'Sullivan <i>Element Six, Ireland</i> <ul style="list-style-type: none"> Abrasive machining of ductile iron with CBN 	Eko, Karasawa <i>Mitsubishi Materials Corporation, Japan</i> <ul style="list-style-type: none"> Laboratory core drilling test on the granite of the carbonate binder PCD 	Denisenko, Kohn <i>University of Ulm, Germany</i> <ul style="list-style-type: none"> Analysis of highly boron-doped diamond electrodes by impedance spectroscopy
				Rao, Burrill, Ben-Zvi, Rank <i>Brookhaven National Laboratory, USA</i> <ul style="list-style-type: none"> Role of diamond secondary emitters in high brightness electron sources
15:45	<i>Coffee Break</i>			
Session 4	A: TOOLMAKING	B: MATERIALS	C: CUTTING TOOLS	D: CONTACTS/SURFACES
16:00	Pretorius, Howard, Bowler, Toomey <i>Element Six, Ireland</i> <ul style="list-style-type: none"> Performance and processability of PCD cutting tool materials 	Dubitsky, Blank, Buga, Semenova, Prokhorov <i>Moscow Technological Institute, Russia</i> <ul style="list-style-type: none"> Production of bulk superhard superconductors on the basis of industrial diamond and CBN powders 	Floeter, Gluche, Fecht <i>GFD/University of Ulm, Germany</i> <ul style="list-style-type: none"> Diamond coated cutting blades for industrial applications 	Nebel <i>Diamond Research Centre, AIST, Japan</i> <ul style="list-style-type: none"> Making contacts to diamond surfaces
	Suzuki, Iwai, Ninomiya, Tanaka, Murakami, Sano, Uematsu <i>Nippon Institute of Technology, Japan</i> <ul style="list-style-type: none"> Development of a new EDG method with electrically conductive diamond cutting edge grinding wheel 	Shulzenko, Sokolov, Nevstruev, Initskaya <i>V. Bakul Institute, Ukraine</i> <ul style="list-style-type: none"> Thermally stable grits of cubic boron nitride 	Uhlmann, Wiemann <i>TU Berlin, Germany</i> <ul style="list-style-type: none"> Milling with superhard CBN coated cutting tools 	Weightman <i>Liverpool University, UK</i> <ul style="list-style-type: none"> The diamond surface
			Tang, Neves, Fernandes, Grácio <i>University of Aveiro, Portugal</i> <ul style="list-style-type: none"> Investigation of hydrogen incorporated in nanocrystalline diamond films by infrared spectroscopy 	Evans, Evans, Bushell, Chase, Langstaff <i>University of Wales, Aberystwyth, UK</i> <ul style="list-style-type: none"> In-situ techniques for characterising diamond surfaces and diamond-metal interfaces
Close at 17:30				
19:30	<i>Dinner: Hotel Fira Palace</i>			

Friday, October 21st 2005

09:00	Keynote 3: Dr. Gary Geaves (Bowers & Wilkins) Industrial Diamond: The perfect material for high quality loudspeakers			
Session 5	A: CONSTRUCTION	B: CBN	C: PCBN	D: HV ELECTRONICS
09:30	Denkena, Bockhorst <i>Hannover University, Germany</i> • Machining of construction materials with wire saws	Tawakoli, Rasifard, Rabiey <i>University of Applied Science Furtwangen, Germany</i> • The new developments in CBN grinding technology	Kountanya, Varghese, Al-Zkeri, D'Anna, Altan <i>Diamond Innovations/Ohio State University, USA</i> • Study of PCBN tool edge preparation in orthogonal hard-turning	Taylor, Chamund, Coulbeck <i>Dynex, UK</i> • Applications of high voltage power semiconductor devices: potential for diamond electronics
	Weber <i>Dr. Fritsch, Germany</i> • The challenges of diamond wire	Varghese, Pakalapati, Kompella, Deutschendorf, Davidson <i>Diamond Innovations Inc., USA</i> • Engineered CBN crystals for superior grinding performance	Okamura, Uesaka, Fukaya, Kanada <i>Sumitomo Electric Hardmetal, Japan</i> • New PCBN tool for hard to cut sintered powder metal materials	Amaratunga <i>University of Cambridge, UK</i> • High power semiconductor materials*
	Amaral, Pozo, Pinto, Fernandes, Guerra Rosa <i>Instituto Superior Tecnico (IST), Portugal</i> • A standard test method to characterise diamond tools used in the construction field	Tuffy, O'Sullivan, Linke <i>Element Six, RWTH Aachen, Ireland, Germany</i> • The effect of dressing parameters and grit size selection for vitrified superabrasive wheels for high specific grinding energy applications	Barry, Akdogan, Smyth, McAvinue, O'Halloran <i>Element Six, Ireland</i> • Application areas for PCBN materials	Guy <i>University of Wales, UK</i> • Cr/Au ohmic contact fabrication and surface morphology studies on single crystal CVD diamond
				Isberg, Tajani, Twitchen <i>Uppsala University, Element Six, Sweden, UK</i> • Carrier properties in diamond
11:00	Coffee Break			
Session 6	A: MATERIAL TECHNOLOGY	B: DIAMOND	C: PCBN	D: NEW APPLICATIONS
11:20	Mawani, Husaini <i>Ghulam Ishaq Khan Institute, Pakistan</i> • Optimization of processing parameters of Cu-Co-Fe based diamond impregnated metal matrix composite for stone cutting applications	Denkena, Karyazin <i>Hannover university, Germany</i> • Grinding of ceramic steel compounds with diamond grinding wheels	Novikov, Shulzenko, Sokolov <i>V. Bakul Institute, Ukraine</i> • Novel superhard materials	Hemley, Yan, Ho <i>Carnegie Institute Washington, USA</i> • Prospects of large single crystal CVD diamond
	Gallagher, Nailor, Scanlon <i>Element Six, Ireland</i> • Characterisation techniques for the study of high-strength coarse diamond	Marinescu, Spanu, Hitchiner <i>Toledo University, USA</i> • Double side grinding of advanced ceramics with diamond wheels	Novikov, Petrussha, Turkevich, Osipov, Smirnova <i>V. Bakul Institute, Ukraine</i> • Promising high purity PCBN material for precision cutting	Schaich, van Oerle, Godfried, Shinoda, Saito <i>Element Six B.V., Sony Corp., The Netherlands, Japan</i> • High NA diamond lenses for near-field optical storage
	List, Frenzel, Vollstaedt <i>Vollstaedt-Diamant, Germany</i> • A new system for single particle strength testing of grinding powders	Bogatyreva, Marinich <i>V. Bakul Institute, Ukraine</i> • Some new applications for synthetic diamond powders	Byrne, Halpin, Barry <i>University College Dublin, Element Six, Ireland</i> • The performance of PCBN in hard turning	Hansen, Connell, Härtwig <i>Element Six, University of Witwatersrand</i> • Performance of HPHT-grown type IIa diamond as a material for synchrotron beam line optical elements
				Newton <i>Warwick University, UK</i> • Defects in single crystal CVD diamond
12:50	Lunch			
13:45	Closing address and Keynote 4: Tanya Fratto (Diamond Innovations)*			
Session 7	A: NEW APPLICATIONS	B: DIAMOND	C: MATERIALS	D: DETECTORS (HIGH ENERGY)
14:15	Heiniger, Wälti <i>University of Applied Sciences, MVT Corp, Switzerland</i> • Novel single crystal diamonds for waterjet cutting applications	Kobayashi <i>A.L.M.T. DIAMOND Corp, Japan</i> • The features and applications of "UPC" - nano/micro forming tools	Collier, Horman, Davis <i>SII Megadiamond, USA</i> • A new generation of coarse-grain PCD	Kagan <i>CERN, Switzerland</i> • HEP detector developments
	Bras <i>European Synchrotron Radiation Facility, France</i> • The role of diamond in synchrotron radiation research	Zeppenfeld <i>RWTH Aachen, Germany</i> • Micro- and nano analysis of diamond grinding grits after machining gamma-titanium aluminides	Mlungwane, Sigalas, Hurman, Herrmann, <i>University of the Witwatersrand, South Africa</i> • The development of a diamond-silicon carbide composite	Berdermann, Caragheorgeopol, Ciobanu, Fischer, Hartmann <i>GSI Darmstadt, Germany</i> • Radiation-hard detectors for spectroscopy and timing
Close at 15.45	Durazo-Cardenas, Shore, Luo, Jacklin, Impey <i>Cranfield University, UK</i> • Tool-life influence of diamond gems whilst diamond turning of silicon infrared optics			Stone <i>Rutgers University, USA</i> • A proposal for large scale charged particle detector based on single crystal CVD diamond

*TBC - to be confirmed

EDUCATIONAL SESSION	
Wednesday, October 19th 2005 15.00 - 18.00	<ol style="list-style-type: none"> 1. Phil Davis <i>Megadiamond</i> An overview of PCD cutting tools 2. Richard Lee <i>Supreme Saws</i> An overview of PCD in woodworking 3. Michael Fleming <i>Seco Tools</i> An overview of PCBN cutting tools 4. Ioan Marinescu <i>University of Toledo</i> Recent developments in diamond/CBN grinding 5. Kurt Proske <i>Diamond Innovations</i> Recent developments in in stone/construction 6. Thomas Schaich <i>Element Six</i> CVD diamond – Optical applications 7. Chris Wort <i>Element Six</i> CVD diamond – Electronics applications
19.30	Welcome Reception
ADDITIONAL PROGRAMME INFORMATION	
Saturday, October 22nd 2005	Golf at the PGA Catalunya Golf Course

The Advisory Committee

Dr. James Butler, Head Gas/Surface Dynamics Section, US Naval Research Lab, USA.

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Tanya Fratto, CEO, Diamond Innovations, USA.

Dr. Richard Hall, Director R&D, Saint-Gobain Abrasives, USA.

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Gerhard Weber, Dr. Fritsch Sondermaschinen, Germany.

Girish Zaveri, Star Diamond Tools, Mumbai, India.

Conference Secretary

Martin Jennings, Diamond At Work Ltd, London, UK.

For further information: www.diamondatwork.com