

SGT NEWS



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ESG 2004 PROCEEDINGS

Peer-reviewed Proceedings of the Seventh ESG, Athens, Greece held on 25–28 April 2004 are published in the April issues of *Glass Technology* and *Physics and Chemistry of Glasses*.

Glass Technology has 180 pages made up from 38 papers. All the papers have been processed through the full refereeing procedure used for standard journal papers.

Applied glass manufacturing topics covered include: sulphate decomposition and sulphur chemistry in glass melting processes by RGC Beerkens of TNO, The Netherlands; the challenge of conventional furnace design by M Lindig of SORG, Germany; high emissivity natural gas flames for improved radiative heat transfer in glass melting furnaces by AJ Faber and M van Kersbergen of TNO, The Netherlands; a reverse engineering approach to the design of the blank mould for the glass blow and blow process by D Lochegnies, P Moreau and R Guillbaut of University of Valenciennes, France; and corrosion of molybdenum electrodes in alkali-alkaline earth-silica glass melts doped with antimony by Jong-Hee Hwang and Chang-Yeul Kim of Korea Institute of Ceramic Engineering and Technology, Jeon-Goo Kwon of Samsung Corning and Ki-Dong Kim of Kunsan National University.

Chemical durability of glasses with compositions similar to the nonvolatile fraction of wastes from an acid battery plant was considered by M Malki, C Bessada and P Echegut in France and M Constantinescu, R Piper and M Olteanu in Rumania. Other related durability and chemical reactions papers are: effect of heat treatment on the microstructure of fly ash derived glass ceramics by MC Ferro and MHV Fernandes of University of Aviero, Portugal, and RCC Monteiro of the University of Lisbon; the influence of environmental factors on the properties of high silica glass fibre by J Setina, A Patmalnieks, V Akishin and G Veveris of University of Riga, Latvia; modelling the soiling of float glass in a polluted atmosphere by T Lombardo, A Chabas, R-A Lefèvre and A Ionescu of the Université Paris; and water in natural glasses with a perlite structure by the Armenian National Academy of Science team Ar Varuzhanyan, H Varuzhanyan and Av Varuzhanyan.

A predictive equation for the refractive indices of silicate melts containing alkali, alkaline earth and aluminium oxides was discussed by M Susa, Y Kamijo, K Kusano and R Kojima of Tokyo Institute of Technology, Japan. The use of scrap soda-lime-silica glass in traditional ceramics was discussed by Y Pontikes, A Christogerou and GN Angelopoulos of the University of Patras, Greece and E Rambaldi, L Esposito and A Tucci of University of Bologna, Italy. A study of the process conditions that lead to an unusual frosted

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EUROPEAN JOURNAL OF GLASS SCIENCE AND TECHNOLOGY

The Society of Glass Technology and the Deutsche Glastechnische Gesellschaft have reached an historic agreement to combine their journals from 2006 into two new series entitled *Glass Technology: European Journal of Glass Science and Technology Part A* and *Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B*. Dr Russell Hand and Prof Malcolm Ingram will continue as senior editors and will be joined by Dr Ulrich Roger and Prof Christian Rüssel as regional editors in Germany. This agreement was approved unanimously by both the Council of SGT (18th May 2005) and the Board of DGG (23rd May 2005).

A Memorandum of Understanding was signed by Dr John Parker as President of SGT and Prof G Müller (DGG President) and Dr Roger (DGG Managing Director) at a ceremony which took place during the opening reception of the DGG Annual Meeting in Würzburg on 23rd May 2005. Messrs John Henderson and Ray Duly, respectively SGT Honorary Secretary and Honorary Treasurer, also signed the Memorandum.

Anyone wishing to publish in the first volume of this new series should submit their paper for consideration as soon as possible since the level of interest is already high. Both the SGT and DGG offices can progress papers through the peer review system:

- Deutsche Glastechnische Gesellschaft (DGG), Siemensstraße 45, D-63071 Offenbach, Germany. Submissions to Dr Roger (Part A) or Professor Rüssel (Part B).
- Society of Glass Technology, Don Valley House, Savile Street East, Sheffield S4 7UQ, UK. Submissions to Dr Hand (Part A) or Professor Ingram (Part B).



glass was explored by the French group J Frayret, A Castetbon, M Potin-Gautier, MF Guimon, C Guimon, Y Bessoles, G Trouve and H De Roulhac.

Contributions came from a range of international authors on optical applications and optical properties of glass. They included: 1D photonic band gap silica doped PBTE quantum dot optical device; the effects of TiO_2 on the structure and spectroscopic properties of silica-hafnia based sol-gel waveguides; nonlinear optical properties of fullerene-organic glassy polymer composites; neodymium phosphate glasses for the active elements of a 128 channel laser facility; second harmonic generation in poled tungsten tellurite glasses; strong refractive index changes induced in Ag^+ ion exchanged Er doped phosphate glass using 248 nm excimer laser radiation; characterisation of the performance parameters of some new broadband glasses for Raman amplification; large spectral range Raman gain prediction for telecommunication glass fibres; infrared optical properties of highly P doped silica fibres: a spectroscopic study; tellurite glass photonic crystal fibre amplifier; white luminescence and afterglow in germanium oxide glasses prepared by the sol-gel method; femtosecond laser

induced phenomena in various glasses and their applications; and sol-gel preparation and optical properties of Er^{3+} and Al^{3+} co-doped Ta_2O_5 films.

How metal ion doping influences the densification kinetics of silica xerogels was explored by E Berrier, B Capoen, M Bouazaoui and S Turrell of Université des Sciences et Technologies de Lille, France. The use of arsenic sulphide glasses as novel photoresist materials was investigated by L Russo, M Vlcek and H Jain of Lehigh University, USA.

Molybdenum is a difficult element to deal with in glasses containing vitrified nuclear waste. RJ Hand, RJ Short, S Morgan, NC Hyatt, G Möbus and WE Lee of the University of Sheffield, UK have looked at some of the issues. For intermediate level waste streams the preparation, thermal



characterisation and chemical durability of calcium iron phosphate glasses was undertaken by BL Metcalfe, SK Fong and IW Donald of AWE, UK.

Other papers cover: the sintering range of porous bioactive glasses; effects of silver additions on the crystallisation and dielectric properties of $6.5\text{CaO}-17.8\text{SrO}-10.1\text{BaO}-8.4\text{Al}_2\text{O}_3-46.4\text{SiO}_2-10.8\text{TiO}_2$ glass; heterogeneous crystallisation in $\text{AgI}-\text{Ag}_2\text{O}-\text{P}_2\text{O}_5$ superionic glasses; cobalt chloride based nanocomposite humidity sensors; silica nanocomposites containing polyacrylamide gel; application of a quartz crystal microbalance for property determination and functionality analysis of thin hydrophilic coatings on glass; synthesis and characterisation of nitrate sulphate phosphate glasses; and phase transformations in NiO and CoO doped magnesium aluminosilicate glasses nucleated by ZrO_2 .

Members of the Society of Glass Technology and conference attendees will receive their own copies of the proceedings issues. Individual copies of the proceedings can be bought through the SGT website or from the Society for: Glass Technology Part A £45, Physics and Chemistry of Glasses Part B £55. Both £90. ■

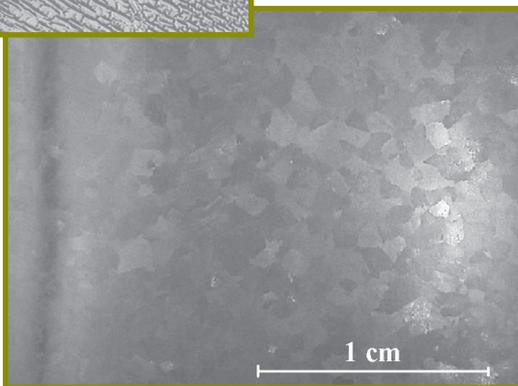


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◀ Fig 2. Frosted glass surface showing scale motifs (*100).

▼ Fig 1. Frosted glass surface showing scale motifs.



EIGHTH ESG CONFERENCE ON GLASS SCIENCE AND TECHNOLOGY

The Society of Glass Technology has been selected to host the 2006 meeting of the European Society of Glass Science and Technology. The meeting will be held on 10–14 September 2006 at St Peter's Campus, University of Sunderland.

The ESG series of meetings normally feature two parallel sessions, one covering purely scientific research and the other covering industrial and technological developments.

The Sunderland meeting will draw some of its influence from the host city and the rich heritage of glass making and the strong support of current glass making that is provided in the region from the National Glass Centre and the glass based courses at the University of Sunderland.

The ESG Conference is held every two years in a different host country. The scope of this conference is to promote glass science and technology and, in particular,

to enhance interaction among experts working on diverse areas such as glass manufacturing, glass archaeology, art and environmental issues, as well as glass science and applications.

The most recent conference held in Athens in April 2004 included around 80 oral papers and 40 poster presentations covering a wide range of interests, including Ta-Luft implementation of the European glass Bref, glass melting economics, sol-gel synthesis of bio-glass composites, development of high gain tellurite and borophosphate glasses for broadband applications, and glass contact performance of traditional and novel pot materials.

The second announcement and call for abstract submissions will be sent out in November 2005 and the abstract submission deadline will be April 2006.

Further information can be obtained from Christine Brown at the Society.

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Peer reviewed proceedings of the seventh European Society of Glass Science and Technology (ESG), held in Athens, Greece between 25-28 April 2004, are published in the April issues of *Glass Technology* and *Physics and Chemistry of Glasses*.

Physics and Chemistry of Glasses has 208 pages made up from 44 papers. All the papers have been through the full refereeing procedure used for standard journal papers.

The invited paper on small angle neutron scattering study of long range density fluctuations in vitreous silica from the University of Reading group in the UK was presented by Professor AC Wright, with co-authors RA Hulme and RN Sinclair. The structure and properties of mixed phosphate and fluoride glasses was discussed by D Möncke and D Ehrhart of the Friedrich Schiller University, Jena, Germany; and LL Velli, CPE Varsamis and EI Kamitsos of the National Hellenic Research Foundation, Athens, Greece. The same group in Athens (CPE Varsamis, A Vegiri and EI Kamitsos) reported on the peculiar role of non-bridging oxygen atoms in ionic borate glasses.

Other papers on the structure of glasses included low frequency dynamics of glasses and crystals of similar composition by VN Sigaev, SV Lotarev, EN Smelyanskaya, PD Sarkisov, AA Volkov, GA Komandin, VG Plotnichenko, VV Koltashev, P Pernice and A Aronne; evidence from infrared spectroscopy of structural relaxation during field assisted and chemically driven ion exchange in soda-lime-silica glasses by MD Ingram, MH Wu, A Coats, EI Kamitsos, CPE Varsamis, N Garcia and M Sola; mixed cation effects in alkali borate glasses with varying total ion concentrations by C Cramer, Y Gao and K Funke; and

correlation between the cation radii and the glass transition in mixed cation silicate glasses by FV Natrup and H Bracht.

Increasingly, the fundamental research is being carried out by large international groups of scientists.

Thermodynamics is increasingly becoming more important in gaining greater insights into glass, its structure and properties. Two authors benefiting from Otto Schott research awards are NM Vedishcheva and BA Shakhmatkin of the Institute of Silicate Chemistry, St. Petersburg, Russia. Along with AC Wright they have investigated the thermodynamic modelling of the structure and properties of glasses in the systems $\text{Na}_2\text{O}-\text{B}_2\text{O}_3-\text{SiO}_2$ and $\text{Na}_2\text{O}-\text{CaO}-\text{SiO}_2$. Inverse thermodynamic modelling of glass from Raman spectroscopic and molecular dynamics results were presented by the Czech group M Liska, R Klement, J Machacek and O Gedeon. Other thermodynamics based papers were structure and properties in (Sr, Na) silicate glasses and melts by DR Neuville; thermodynamic properties and vaporisation processes of ternary glass forming silicate systems: $\text{CaO}-\text{Al}_2\text{O}_3-\text{SiO}_2$, $\text{CaO}-\text{TiO}_2-\text{SiO}_2$ and $\text{BaO}-\text{TiO}_2-\text{SiO}_2$ by VL Stolyarova, SI Lopatin and EN Plotnikov; thermochemical and physical properties of glasses based on the system $\text{CaO}-\text{MgO}-\text{Al}_2\text{O}_3-\text{SiO}_2$ by JW Shin, W Wilsmann and R Conradt; and thermally stable high hydroxyl silica gel glasses: synthesis and properties by GE Malashkevich, AG Malashkevich, B Champagnon, V Califano and VN Sigaev.

The important use of glass in surgical implants was discussed by KH Karlsson of Abo Akademi University, Finland: titanium, glass and apatite for bone repair. Other medical based papers included preparation and

structural study of calcium phosphate glasses and glass ceramics for biomedical applications by MA Karakassides of the University of Ioannina, Greece; and glassy drugs: a Raman investigation of binary dihydropyridine systems by D Vassou, V Gionis and GD Chryssikos of the National Hellenic Research Foundation.

Analysis of the structure of glasses was continued with papers on the structure and properties of nanoparticle glass composites by M Dubiel, X Yang and R Schneider of the University of Halle-Wittenburg and H Hofmeister and KD Schicke of the Max Planck Institute, Germany; glasses in $\text{MnNbOF}_5-\text{BaF}_2$ and $\text{MnNbOF}_2-\text{PbF}_2$ systems by LN Ignatieva, SA Polyschuk, TA Antokhina and VM Bouzunik of FEBRAS, Vladivostok, Russia; distribution of paramagnetic Co and Cr ions in phase separated alkali borosilicate glass observed by leaching behaviour and ^{29}Si NMR relaxation by H Miyoshi, D Chen and T Akai of Japan Science and Technological Organisation, Osaka, Japan; a photoelectron spectroscopy study of iron sodium tellurite glasses by A Mekki and GD Khattak of King Fahd University, Saudi Arabia; and local structure and redox state of vanadium in vanadium strontium borate $[(\text{V}_2\text{O}_5)_0.5(\text{SrO})_0.5y(\text{B}_2\text{O}_3)_y]$ oxide glasses by the same authors and N Tabet. Other papers on the structure of glass included void species structure of chalcogenide glasses by positron annihilation lifetime technique; the problem of theoretical description of anomalous light scattering by phase separated

LOCAL SECTION CONTACTS

For details of forthcoming local section events in your area, contact the following. All SGT members and non-members welcome.

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Tel 01259 218822.

Yorkshire

– Miss R M Sales,
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NORTH AMERICA

– Dr A G Clare,
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INDIA

– Dr J Mukerji,
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glasses; structural investigation of metaphosphate glasses; ion dynamics in $0.3[xM_2O \cdot (1-x)Me_2O] \cdot 0.7B_2O_3$ (M, Me=Li, Na, K) mixed alkali glasses; bond energies in glass forming oxide systems: calculated and experimental data; borate anomaly, anharmonicity and fragility in lithium borate glasses; DC poled lanthanum boron germanate glasses: Raman study of the poling mechanism; and hybrid materials based on CdS and CdSe nanoparticles in glassy block copolymers.

Glass making and glass formation were the source of investigations: Glass formation and crystallisation behaviour of nanostructured sodium niobate by direct glass crystallisation by Lj Radonjić, M Todorović and J Miladinović of the University of Novi Sad and the University of Belgrade, Serbia and Montenegro (these authors also reported on the processing of ferroelectric thin layers of barium titanate by the sol-gel method); synthesis and photo-induced changes in the thermal and

mechanical properties of some As containing sulphide glasses by K Petkov and D Kozhuharova of the Bulgarian Academy of Sciences and E Cernoskova of the Czech Academy of Sciences and University of Pardubice; modified sol-gel hybrid borate structures by Y Ivanova, H Hristov and S Handjieva of the University of Chemical Technology, Sofia, Bulgaria; the influence of Ga on the optical and thermal properties of Er_2S_3 doped stoichiometric and nonstoichiometric Ge-Ga-Se glasses by M Munzar, K Koughia, D Tonchev and SO Kasap of the University of Saskatchewan, Canada, T Sakai, K Maeda and T Ikari of Miyazaki University, Japan, C Haugen, R Decorby and JN McMullin of University of Alberta, Canada.

Other papers reported matrix effect on fluorescence properties of Ce^{3+} in fluorophosphate and fluoride glasses; glassy transformation and structural change in oxygen doped $GeSb_2Te_4$ films; liquid phase separation and crystallisation in CoO doped glasses of the Li_2O-



$Al_2O_3-SiO_2-TiO_2$ system; effect of phase transformations in $Na_2O-Nb_2O_5-SiO_2$ glasses on their transparency and Kerr coefficient variation; nonlinear optical composites based on oxide glasses and ferroelectrics; correlation between viscosity and ion dynamics in a fragile ionic melt; structural investigation of sol-gel derived silicon oxycarbide multicomponent amorphous materials containing TiO_2 and ZrO_2 ; and characterisation of selected chalcogenide glasses.

A complete bound version of the proceedings (408 pages, A4) can be purchased from the SGT for £100 for non-members and £80 for members. SGT members can choose either *Glass Technology* or *Physics and Chemistry of Glasses* or pay for both. Members will receive the other journal for £30. ■

BOSC D'ANTIC ON GLASS MAKING

Including essays on the manufacture of faience and the assaying of ores, published 1758-80

Translated by Michael Cable

This is the second of three volumes illustrating progress in understanding glass making from the 17th century to the early part of the 19th. The first was Christopher Merrett's *Art of Glass* in 1662, an extensively annotated translation of Antonio Neri's *L'Arte Vetraria* first published in Florence in 1612. This volume from France covers the years 1758-80 and the third will describe glass technology in Austria and Germany in 1820-35. Each of these shows notable advances in understanding over the previous volume.

Paul Bosc D'Antic was a Protestant physician who became fascinated by glassmaking and gained influential friends who gave him the task of improving the manufacture of plate glass at Saint-Gobain in 1755. He spent two years there before being dismissed but continued to make his career in glassmaking. At one stage he came to England hoping for a post at Ravenhead but was disappointed. After returning to France he eventually became physician to the King.

He wrote extensively on glassmaking and several other subjects in papers published between 1758 and the appearance of his *Collected Works* in 1780. His most important essay is a long one on *Means of improving glass making in France* which in 1760 won him a prize offered by the Royal Academy of Sciences. This also offended his erstwhile employers at Saint-Gobain. It was supplemented by extensive notes written for the 1780 publication.

This volume contains translations of the *Preliminary Discourse* that he wrote for the *Collected Works*, the prize essay with the notes inserted where appropriate, nine others concerned with various aspects of glass making and two more on the assaying of ores and on the manufacture of faience.

The subjects of the nine papers include bubbles in glass, smears in glass, crucibles from the Auvergne, manufacture of potash, use of unusual minerals as raw materials and manufacture of sheet glass.

The volume is 250 pages long with six illustrations in A5 format (210mm x 148mm). ISBN 0-900682-44-2. Paperback. £25.00 (£20.00 SGT members). ■



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