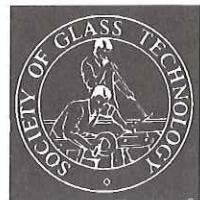


SGT NEWS



TURNING SAND INTO GOLD

Sodium silicates may not be what most people expect at the end of the rainbow but according to Derek Aldcroft of Crosfield Chemicals, prosperity may only be a few processing steps away. His company's Midas touch was revealed to a joint meeting of the SGT's North West Section and the Institute of Materials North West Ceramics Group.

Sand does not turn into gold, of course but some forms derived by a series of novel processes (such as aerogels) are of greater value. Silica sand can be transformed either by a furnace or hydrothermal reaction into sodium silicate glass and from there, dissolved into water. The silicate

liquor is then boiled under high temperature and pressure to destroy any high polymeric species which would reduce the



homogeneity of the final product.

Silica gels are made by destabilising the silicate liquor or solution with acid. Sol particles link in gelation to form a three-dimensional network. Control of pH during this phase determines the structure; as pH increases, the gel becomes less ordered.

The sol-gel transformation takes time and when complete, a typical gel composition is 5%-20% silica, the remainder being water. The water holds together the silica structure and its removal by various drying steps will cause the monolithic gel to shrink and in many cases collapse into a powder. Porosity of 50% is usually preserved in controlled drying.

Forming a gel using a volatile organic compound instead of water and then manipulating temperature and pressure to remove the organic compound without forming a meniscus has helped to develop aerogels. Carbon dioxide is also being used to speed up production and

reduce the reliance on expensive volatile organics.

Aerogels have similar optical properties to glass but are 100 times more insulating. The water in a pond covered by a sheet of aerogel will boil, as the energy from sunlight cannot be radiated away by heat.

Turning sand to gold follows a long and specialised path. Specialty silicas may cost around £5/kg, while catalyst supports between £10 and £20/kg. By comparison, chromatography supports range into the £100+ and if they contain special active compounds, £1000/kg. Cerenkov radiation detection sells at £20,000/kg and finally, monolayer aerogels for x-ray laser applications in the Star Wars programme were way past the price of gold!

LOCAL SECTION CONTACTS

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

London

— Mr M C Brew,
United Glass Ltd,
Porters Wood, St
Albans, Herts AL3
6NY. Tel 0727
59261.

Midlands

— Mr R W Fisher,
Sismey and Linforth,
Unit 94, Heming
Rd, Redditch,
Worcester B98 0AE.
Tel 0527 29810.

North East

— Mr J Henderson,
44 Woodside Ave,
Throckley, Newcastle
upon Tyne NE15
9BE. Tel 091 264
4775.

North West

— Dr D J Bridson,
Pilkington Glass,
Prescot Rd, St
Helens, Merseyside
WA10 3TT. Tel
0744 692358.

Scottish

— Mr D A Rennie,
United Glass Ltd,
Glasshouse Loan,
Alloa FK20 1PD.
Tel 0259 218822.

Yorkshire

— Miss R M Sales, 20
Blackbrook Drive,
Sheffield S10 4LS.

1993 GLASS SELLERS' AWARD WINNER

Dr Phil Gaskell of the Department of Physics, University of Cambridge, has won this year's Glass Sellers' Award for his outstanding work in furthering the understanding of the structure of silicate glasses. He receives a cheque for £1000 and an inscribed crystal trophy.

Following on from work defining the structure of amorphous metals, Dr Gaskell has developed the general theme that glasses must follow similar structural principles to those that govern crystalline forms. Once this

proposal is adopted, the scope of the random model can be reduced and better structural models developed.

Dr Gaskell's work has also been recognised this year by the award of the A Winter-Klein Prize.

The Glass Sellers' award alternates each year between two fields... science, technology and engineering; and art and craft. Recipient of the 1992 award was Clare Henshaw. Anyone interested in entering should contact the Society for further details.



Dr Phil Gaskell, winner of the 1993 Glass Sellers' Award.

WORKING FROM THE INSIDE OUT

Glass has had an enormous influence on beer. Its introduction in public houses forced brewers to clarify the original cloudy appearance of their products. Having previously designed glassware, today Will Court is now brewing Enville Ale, an award-winning beer with 'novel' ingredients. Stepping in as a last-minute substitute for the SGT President, his talk to the Midlands Section contrasted the two industries and served up a fitting conclusion.

To begin making a product from raw materials to consumer demands total commitment and belief in its worth. Some time after leaving Royal Brierley Crystal, Will Court decided that he had to take control of his destiny and start up his own small brewery. Many of the problem solving techniques he had used in the glass industry were valuable in constructing the plant, as was an appreciation of process control.

Will first began brewing at the Wiltshire Brewery where, in return for his work as a locum brewer, he was allowed to brew his own beer to an old family recipe.

The takeover of Wiltshire by United Brewers of India terminated

this agreement, leading him to construct his own brewery and gain greater control of his future. Will moved into a converted building, installed his own equipment and commenced brewing earlier this year.

The Enville Estate, which is the source of the name of his beer, also provided the brewing liquor (water) from a spring below the estate. Stainless steel was used throughout for the equipment, to ensure a high degree of cleanliness.

Brewing uses similar principles to glassmaking; get your material to the right temperature, then bring in cooling (or heating for glass) at the correct time. The balance between the introduction of sugar and the temperature is critically important. The source of sugar for the Enville Ale is the distinctive feature of the brew. Will Court is a fifth generation beekeeper and with a partner owns 150 apiaries, a separate business in its own right. Separating the honey from the comb entails some waste, a mixture of wax and honey known as 'dross', which is used as prime sugar for the beer.

The clarity of Enville Ale is ensured by using traditional finings, fish bladder but for rush orders, the brewery is experimenting with auxiliary finings based on sodium silicate/silicid acid

complex compounds... another connection with the glass industry.

The beer is a light amber colour, original gravity 1042 but with an alcohol content of 4.8%, there is a definite hint of honey in its taste. It is supplied to 29 regular outlets, with another 46 on the supply list. Several myths have been built up on the potency of the brew and its effects; a baby boom among regulars at one of the beer outlets hit the headlines in local newspapers recently, for example.

Will Court is looking to bottle Enville Ale but his demands for only a relatively small number of bottles is creating its own problems. Can anyone in the UK supply a distinctive bottle for the growing number of micro-breweries at a reasonable price? There may be a reasonable niche, as bottled real ale regains some of the ground lost to lagers.

FEBRUARY DIARY DATES

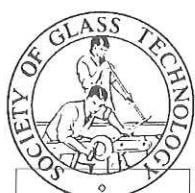
LONDON: On Tuesday 8th February, Mr M Hodgson of United Glass will talk on the subject 'Quality control in a glasshouse'. Another speaker (to be announced) will discuss 'Product safety' at this joint meeting with the Institute of Quality Assurance.

MIDLANDS: 'The manufacture of tableware glass' is the theme of a presentation to be given on Monday 7th February.

NORTH EAST: Mr R Beard will talk about 'Decorating and machinery' on Tuesday 8th February.

NORTH WEST: A joint meeting with the Institute of Measurement and Control has been arranged for Tuesday 22nd February. 'Glass in electronics' is the theme of the evening.

YORKSHIRE: 'Quality counts' is the title of a presentation to be delivered at the Knottingley premises of Greggs on Thursday 3rd February.



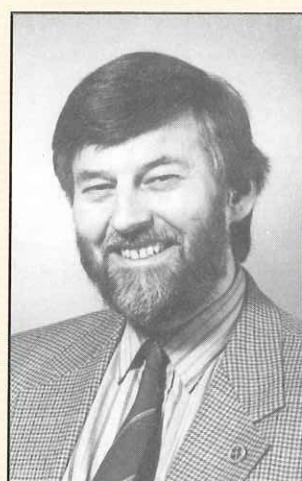
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ACTING PRESIDENT

Dr David Martlew has stepped in as Acting President of the Society of Glass Technology, following the resignation from office of Duncan Rotherham.

Recent senior management changes at Rockware Glass had seen the departure of Mr Rotherham and meant he could no longer commit himself fully to the Society.

Under rule 27, in the event of the President being unable for any reason to continue to serve in his position, the senior Vice President shall act as President until a new one can be elected.



Dr David Martlew, Acting President of the SGT.