

## Book review

*Sucrose Properties and Applications*, Edited by M. Mathlouthi and P. Reiser, Blackie Academic and Professional, Glasgow, UK, 1995. ISBN 0-75-140223-0, 254pp, £79.00.

This excellent review of sugar technology, stimulated by CEDUS (*Centre d'étude et du documentation du Sucre*), contains 12 topical chapters written by international experts. Not surprisingly, the EC is now the world's leading producer of sucrose, a market which is dominated by nutritional trends and currently favoured by the switch from fats to carbohydrates. The emergence of sugar-based chemical products is being stimulated by this trend coupled with their environmentally friendly image. The enormous ethanol-fuel (gasohol) programme in Brazil is a constant reminder of the future energy requirements. However, this book is not concerned with the growth of beet and cane crops. It highlights the forte of the sugar industry, that is purification by crystallisation, a process that is finely tuned to the needs of the customer. The market for amorphous sugar, in fondants, fudges, etc., is also carefully evaluated since this product can profoundly influence the taste, texture, and aroma of foods and confectionary. Extensive data on the solubility of sucrose are given, an absolute essential for the industry, in order to calculate supersaturation levels which subsequently drive the crystallisation process. The hydrodynamic problems that can arise from friction in pipes, pumps and centrifuges are interpreted from the rheological data of technical sugar solutions.

As expected, methods for the analysis of sugar solutions by a range of spectroscopic, physical, chemical and enzymatic techniques are comprehensively and critically reviewed to conform with the strict standards laid down by International Organisations. Throughout the book numerous physical properties of sucrose in the crystalline state, the amorphous form and in aqueous solution are delineated.

The choice of sweetener for a food or drink depends not only the ratio of sweetness to cost, but as explained, also has an effect upon taste, texture, appearance, moisture and storage of the product. Examples are given of how sugar can influence the retention of aroma, thus enhancing the flavour, how aggregates of micro-crystals can be used to encapsulate a variety of flavours, and how osmotic dehydration, or de-watering, is readily achieved by incorporating sugar in foods. Also the sweetness of sugar can be enhanced by either caramel-type molecules (maltol) or synergism with H.I. sweeteners;

alternatively, its sweetness can be quenched with arylalkanoic acids, thus adding to its versatility as a bulking agent.

Recent chemical and microbiological innovations have led to new sucrose-based food additives, including an H.I. sweetener (*Sucralose*), mono- and di-esters of fatty acids as emulsifiers and surfactants, polyesters as low-calorie fats and oils (*Olestra*) and low-calorie, low-intensity sweeteners (*isomaltulose*, *Palatinit*, *Leucrose*, *Neosugar*, etc.).

Technical books are usually dull but not in this case; this is a quality book, albeit highly specialised, hence the high price. Nevertheless, it will be required reading for sugar and food technologists who need to keep abreast of current developments in this field.

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