In this issue

Confounding a problem?

It is fairly well known now that manufacture and use of iodized salt was recommended as a measure against goitre. This method is inexpensive and easy to put into effect widely. C. Gopalan (**page 392**) therefore questions the suggestion of periodic parenteral administration of iodized oil as an alternative. Besides the higher cost, this method carries the risk of use of contaminated syringes, and hence the danger of the problem of hepatitis and AIDS.

Molecular approaches to pathogenicity

Candidiasis is the clinical manifestation of infection by the pathogenic, dimorphic yeast *Candida albicans*. Recent increases in the incidence of candidiasis coincide with the rise in immunodeficiency syndromes, caused by HIV infection and also with the increasing use of immunosuppressive drugs. As an important human pathogen, *C. albicans* merits study. Asis Datta (**page 400**) addresses the issue of the factors that contribute to the virulence of the organism. Studies on the differentiation and morphogenesis in *C. albicans* have been stimulated by many remarkable features, including the ability to switch colony morphologies. As in many other areas of biology, the role of Ca^{2+} and phosphorylation in growth and differentiation are central themes. Virulence is also related to the ability of the organism to adhere to host surfaces. Consequently, secreted hydrolytic enzymes, including an acid proteinase and *N*-acetyl-glucosaminidase, have been implicated as virulence factors. The author makes a case for investigating amino sugar metabolism in *C. albicans*, suggesting the possibility that these studies may further our understanding of the molecular basis of virulence.

Polypyrrole thin films

Many organic polymers have been shown to behave like synthetic metals. However, the method of preparation can be critical in determining the material properties and for practical applications in electro-optic devices. L. Cherian and P. Radhakrishnan (**page 423**) report the preparation of thin films of polypyrrole on glass substrates using the RF plasma polymerisation method. Further, the optical band gap is shown to be reduced significantly by iodine doping.

Smectic noodles

Smectic A liquid crystals consist of a stacking of fluid layers of long organic molecules. The term smectic has its origin in the Greek word *smectos* which means 'soap-like'. When dissolved in water, soap molecules like potassium stearate also form layered structures in an appropriate concentration range. The formation of such layers at the soap solution–air interface gives rise to soap bubbles.

The smectic layers can bend easily as there is no regular arrangement of molecules within them. The efficient packing of such equidistant curved layers within a given volume is an interesting geometrical problem and continues to be a subject of theoretical and experimental research. On a 'macroscopic' scale ($\gtrsim 1\ \mu m$), the layers arrange themselves in what are called 'Dupin-cyclides' involving confocal hyperbolae and ellipses which are line defects about which the molecular orientation changes rapidly.

The isotropic–smectic A transition is thermodynamically first order in nature. One of the interesting problems connected with this transition is that of the morphology of the smectic A liquid crystal as it separates from the isotropic phase and grows. Friedel had already noted in early 20's that the smectic A forms short elongated structures which he called 'bâtonnets'. These are decorated with focal conic domains which are arranged symmetrically about their long axes. Fournier and Durand have recently carried out a detailed study of these structures and have pointed out that their morphology is a result of the positive anisotropy of interfacial tension (parallel and perpendicular to the layer normal).

Pratibha and Madhusudana (**page 419**) observed a completely different morphology when smectogenic compounds are mixed with a large amount (~50 mole%) of an aliphatic compound like dodecyl alcohol. The smectic A first separates as spherical droplets as the sample is cooled, and starts elongating to form noodle-like cylindrical structures as the cooling is continued. After attaining certain length, there is a sudden collapse to form a compact object again. This strange behaviour can be explained. According to the authors, the sign of the anisotropy of interfacial tension is negative in such systems.

Such structures have very large surface-to-volume ratios and are hence rather unusual. At a cooling rate of $0.1°C\ min^{-1}$, one can get cylindrical structures whose lengths exceed 500 μm but have a fixed diameter of about 6 μm (see cover).