

Some peculiar patterns of silicon biomineralization in diatoms

SATADAL DAS

Dept. Of Microbiology, Peerless Hospital & B. K. Roy Research Centre Kolkata, E-mail: drsatdas@hotmail.com

The most important aspect of diatoms is their unexplained peculiar silicon frustules ornamented with various designs of silicon biomineralization. During detailed study of the patterns of silicon biomineralization in diatoms some very peculiar patterns were observed which are given below.

The Vogel's floret model is found on many diatoms in their patterns of silicon biomineralisation e.g. on *Coscinodiscus oculus-iridis*. The ratios of outer and inner rings of many centric diatoms and the ratios between numbers of areolae before and after bifurcation of the axis are very close to the golden ratio. Hyperbolic space is present in *Trinacria* centric diatoms. Many triangular species of *Gricezantium* and *Triceratium* are flat and spherically curved respectively. The arrangements of the porelli in some species represent a lattice of squares in a hyperbolic space in a conformal representation. Common infinite ratios 1.11111..., 1.333333..., 2.66666..., between the ring diameters and costae numbers are very peculiar in centric diatoms. Again the complex structure of some diatoms e.g. *Campylodiscus* peculiarly mimic Schrödinger's standing waves or stationary states or orbital. Silicon biomineralization in one diatom *Campylodiscus moricus* looks absolutely similar to Rudy Rucker's Kappa Tau space curve.