# Defect Structure and Texture of Isolated Phospholipid Bilayers

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The textures of the phospholipid phases $P_{\beta}$, and $L_{\beta}$, of DMPC are investigated by freeze fracture electron microscopy.

Two types of the well known ripple phase $P_{\beta}$, are observed. Three dimensional image reconstruction reveals their symmetric and asymmetric profiles. Possible molecular arrangements are discussed.

Symmetry has considerable consequences for the defect pattern. The point defects of different strength are topologically allowed or forbidden. But energy determines their appearence and the possible degeneration to line defects.

Addition of small amount of solutes such as cholesterol or proteins changes the combination and the mobility of the defects. The pure $L_{\beta}$,-phase is a ripple free phase. But solutes stabilize a similar defect pattern as in the $P_{\beta}$,-phase.