

## **Crystallization of lysozyme in pores of etched heavy-ion tracks**

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Intensive studies of protein crystallization are provoked by the need to accumulate structural information and to open up novel potential applications in science and technology. This work focuses on the crystallization of hen egg white lysozyme (HEWL) in micrometer-size templates of etched swift-ion tracks produced in foils of polycarbonate, polyimide, and mica. HEWL deposition was accomplished by the salting with sodium chloride method at 20 and 6°C. The crystals overgrowing the pore orifices showed no orientation when crystallized at room temperature. At 6°C, they presented a regular habit and were uniaxially oriented on a polycarbonate substrate. Biaxial orientation was observed on polyimide membranes, and epitaxial orientation dominated on mica. However, no crystallization was observed on the mica membrane covered with a thin gold layer. The epitaxial growth of HEWL was particularly pronounced in the case of ordered substrates and low crystallization temperature, i.e. at higher supersaturation. By computer simulation it was possible to determine the surface lattice planes and thus provide the preferential crystal-growth orientation. Crystallization of lysozyme and other proteins in ion-track templates of submicrometer channels should be of high practical interest.