

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Sorting Category: 04. (E)

Growth of poly-DL-lysine hydrobromide single crystal on mica(001) surfaces.¹ DIPAK GOSWAMI, XIAOGANG LIU, YI ZHANG, JOHN OKASINSKI, KHALID SALAITA, PENG SUN, MICHAEL BEDZYK, CHAD MIRKIN, Northwestern University, CHAD A. MIRKIN COLLABORATION, MICHAEL J. BEDZYK COLLABORATION — We present a method for controlling the initiation and kinetics of polymer crystal growth using atomic force microscope tip coated with poly-DL-lysine hydrobromide (PLH). PLH form triangular prisms on freshly cleaved mica(001) surfaces. These prisms grow in a parallel or anti parallel fashion, which indicates epitaxial growth of the crystal with respect to underlying mica lattice. Back reflection Laue on mica (001) surface along with optical microscopy measurements guided us to propose a model which showed that two preferred prism orientations exist along [100] direction of the mica lattice. Grazing incidence oscillation x-ray diffraction measurements revealed that the prisms grown on mica are single crystal with a lattice that has an in-plane orientational epitaxy with the underlying mica lattice. We have observed two growth exponents for the growth of the edge length of the PLH prisms. This reveals that in the early stage of the growth, the prisms grow faster and then the growth rate decreases.

¹Supported by: NSEC, IBNAM, NIH, NSF, Baxter-Healthcare

Prefer Oral Session
 Prefer Poster Session

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Date submitted: 06 Dec 2005

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