

# 3rd European Conference on Organized Organic Thin Films ECOF '90

Mainz, Germany  
October 11–13, 1990

*Organizing Committee and Symposium Editors:*

G. Decher, H. Möhwald, I. R. Peterson, H. Riegler

Institute of Physical Chemistry,  
Johannes Gutenberg Universität,  
D-6500 Mainz, FRG

---

Copyright © 1991 Hüthig & Wepf, Basel

ISBN 3-85739-246-0

## CONTENTS OF MAKROMOL. CHEM., MACROMOL. SYMP. 46

G. Decher, H. Möhwald, I. R. Peterson, H. Riegler	
Preface .....	xiii
1. D. M. Taylor, H. Morgan, C. D'Silva Assembling networks for molecular electronics .....	1
2. S. Y. Zaitsev, V. P. Zubov* Functional polymeric monolayers and liposomes .....	9
3. G. Decher*, F. Klinkhammer Spectroscopic studies of the stability of monolayers of 2-docosylamino-5-nitropyridine at the air/water interface .....	19
4. C. Bosshard, M. Küpfer, M. Flörsheimer, P. Günter, C. Pasquier, S. Zahir*, M. Seifert Optical waveguiding and nonlinear optical characterization of 2-docosyl- amino-5-nitropyridine Langmuir-Blodgett films .....	27
5. F. Porteu, S. Palacin, A. Ruaudel-Teixier, A. Barraud Synthesis of 2-D polymer from semi-amphiphilic Langmuir-Blodgett films	37
6. G. Brezesinski, G. Förster, W. Rettig Correlations between chemical structure and chain packing in two- and three-dimensional systems .....	47
7. A. M. Bibo, C. M. Knobler, I. R. Peterson* Monolayer phases of the fatty acids and their ethyl esters .....	55
8. D. Weiß, R. Kietzmann, W. Storck, J. Lehnert, F. Willig* Fluorescence as probe for transport and lateral order in vapor grown Langmuir-Blodgett multilayer-type single crystals of anthracene chromo- phores with fatty acid tails .....	65
9. G. Grewer, M. Lösche* Concentration dependence of the electro-optical spectra from two-dimen- sional aggregated chromophore systems .....	79
10. K. Kjaer*, J. Als-Nielsen, R. M. Kenn, C. Böhm, P. Tippmann-Krayer, I. R. Peterson, A. M. Bibo, C. A. Helm, H. Möhwald, F. Leveiller, D. Jacquemain, S. Weinbach, L. Leiserowitz, M. Deutsch X-ray scattering studies of fatty acid films on water and on CdCl <sub>2</sub> solutions .....	89
11. D. Ducharme*, C. Saesle, R. M. Leblanc, P. Meller, C. Mertesdorf, H. Ringsdorf Optical measurements of an acylated azacrown at the air-water interface	97

12.	C. A. Helm*, F. J. Schmitt, J. N. Israelachvili, W. Knoll Ligand-receptor interactions directly measured with the surface forces apparatus .....	103
13.	K. Spratte, H. Riegler* Fluorescence microscopy studies of layer/substrate interaction during the Langmuir-Blodgett transfer: Fractional condensation and local layer modification in lipid monolayers at the three-phase line .....	113
14.	R. Popovitz-Biro, M. Gavish, M. Lahav, L. Leiserowitz Ice nucleation by monolayers of aliphatic alcohols .....	125
15.	F.-J. Schmitt, A. L. Weisenhorn, P. K. Hansma, W. Knoll* Interfacial recognition reactions as seen by fluorescence-, surface plasmon- and atomic force microscopies .....	133
16.	L. Häußling*, W. Knoll, H. Ringsdorf*, F.-J. Schmitt, J. Yang Surface functionalization and surface recognition: Plasmon optical detection of molecular recognition at self-assembled monolayers .....	145
17.	J. Shen*, X. Zhang, X. Cha, R. Yin A study of microgel star amphiphile monolayers .....	157
18.	J.-P. Bourgoïn*, A. Ruau del-Teixier, M. Vandevyver, M. Roulliy, A. Barraud, M. Lequan, R.-M. Lequan "Homodoping" strategy for building conducting Langmuir-Blodgett films	163
19.	D. N. Batchelder*, C. Cheng, W. Müller, B. J. E. Smith A compact Raman microprobe/microscope: Analysis of polydiacetylene Langmuir and Langmuir-Blodgett films .....	171
20.	A. Tamulis*, S. Janušonis, L. Bažan Selection rules for self-formation in the molecular nanotechnology ....	181
21.	M. Kastowsky*, A. Sabisch*, H. Bradaczek Membrane: A program for simulation and analysis of X-ray diffraction patterns of thin multilayer films .....	187
22.	T. Schindler*, U. Scheunemann, W. Hickel Electrical insulating properties of metal-LB layers-metal devices .....	193
23.	D. M. Taylor*, A. E. Underhill, S. K. Gupta, C. E. Wainwright Conducting LB films based on metal complexes of sulphur donor ligands	199
24.	A. Laschewsky, W. Paulus, H. Ringsdorf*, D. Lupo, P. Ottenbreit, W. Praß, C. Bubeck, D. Neher, G. Wegner Amphiphilic dyes for NLO in LB-films .....	205
25.	S. Schwiegk*, H. Fischer, Y. Xu, F. Kremer, G. Wegner Characterization of LB multilayers of soluble phthalocyaninatopoly-siloxane .....	211

26. M. Sawodny, A. Schmidt, C. Urban, H. Ringsdorf, W. Knoll\*  
Optical data storage in Langmuir-Blodgett-Kuhn multilayer assemblies of  
azo-dye side chain LC-polymers ..... 217
27. T. S. Berzina, S. A. Shikin, V. I. Troitsky\*, L. G. Yanusova  
The influence of structure change on electrical properties of conducting  
LB films produced from hexadecyl-TCNQ and heptadecyldimethyl-TTF  
mixture ..... 223
28. A. A. Kalachev\*, G. Wegner  
Low temperature plasma treatment of Langmuir-Blodgett films from  
tetra(methoxy)-tetra(octyloxy)-phthalocyaninato-polysiloxane and poly-  
diethylsiloxane ..... 229
29. M. Sawodny\*, F. Embs, R. D. Miller, F. Aussenegg, J. Stumpe, G. Wegner,  
W. Knoll  
Photoablation experiments of thin polysilane films prepared by the  
Langmuir-Blodgett-Kuhn technique ..... 235
30. P. Tippmann-Krayer, W. Meisel, U. Höhne, H. Möhwald\*  
Ultrathin metal films and inorganic clusters via thermodesorption of LB  
films ..... 241
31. D. Johannsmann\*, F. Embs, C. G. Willson, G. Wegner, W. Knoll  
Visco-elastic properties of thin films probed with a quartz crystal  
resonator ..... 247
32. J. Magan\*, D. Lupo, W. Praß, U. Scheunemann, P. Lemoine, W. Blau,  
M. Hogan  
Excimer laser ablation of Langmuir-Blodgett films ..... 253
33. U. Höhne, H. Möhwald\*  
Thermodesorption of LB-multilayers of metal stearates ..... 259
34. R. Seitz, E. Mitchell, I. R. Peterson\*  
An electron diffraction study of deposited docosanoic acid monolayers 265
35. H. J. Merle, Y. M. Lvov, I. R. Peterson\*  
X-ray study of LB multilayers of cadmium soaps in the vicinity of the  
break up point ..... 271
36. V. Tsukruk\*, N. Mischenko, E. Scheludko, A. Tolmachev  
Order in amphiphilic polyimides: Cast and Langmuir films ..... 277
37. T. Gutberlet\*, S. Markwitz, H. Labischinski, H. Bradaczek  
Monolayer investigations on the bacterial amphiphile lipoteichoic acid and  
on lipoteichoic acid/dipalmitoylphosphatidylglycerol mixtures ..... 283
38. L. A. Feigin\*, Y. M. Lvov, V. R. Novak, I. V. Myagkov  
Structural temperature-induced transitions in polar Langmuir-Blodgett  
films of *p*-(*p*-octadecyloxyphenylazo)benzenesulfonamide ..... 289

39.	R. Schmidt, D. Brandl, C. Schoppmann, H. Voit*, D. Johannsmann, T. Kröhl, W. Knoll* Heavy ion induced desorption (HIID) mass spectrometry of Langmuir- Blodgett films built from Cd-salts of fatty acids .....	295
40.	M. Piepenstock, M. Lösche, H. Möhwald* Local control of antibody binding to haptent-presenting interfaces: Steric and electrostatic interaction .....	301
41.	M. Ahlers, M. Hoffmann, H. Ringsdorf*, A. M. Rourke, E. Rump Specific interaction of desthiobiotin-lipids and water soluble biotin compounds with streptavidin .....	307
42.	G. Decher*, J. MacLennan, M. Straus, U. Sohling New amphiphilic terphenyl liquid crystals for the preparation of highly ordered ultrathin films .....	313
43.	G. Decher*, J. D. Hong Buildup of ultrathin multilayer films by a self-assembly process, 1. Consecutive adsorption of anionic and cationic bipolar amphiphiles on charged surfaces .....	321
44.	P. Quint, H. Möhwald* Composition and lateral distribution of self-assembling monolayers containing surfactant and dye .....	329
45.	R. H. G. Brinkhuis, A. J. Schouten Crystallization of isotactic poly(methyl methacrylate) in monolayers and thin films .....	335
46.	R. H. G. Brinkhuis, A. J. Schouten Sterocomplexation of poly(methyl methacrylates) in monolayers at the air water interface .....	341
47.	O. Karthaus, H. Ringsdorf*, C. Urban Discotic liquid crystals at the air water interface .....	347
48.	A. Matzenbach*, P. Ottenbreit*, W. Praß Mono- and multilayers from preformed polymers - influence of molecular weight .....	353
49.	V. Erokhin*, L. Feigin, G. Ivakin, V. Klechkovskaya, Y. Lvov, N. Stiopina Formation and X-ray and electron diffraction study of CdS and PbS particles inside fatty acid matrix .....	359
50.	A. A. Kalachev*, V. M. Litvinov, G. Wegner Polysiloxanes at the air/water interface and after transfer onto substrates	365
51.	C. Kurthen*, W. Nitsch, W. Stöckelhuber Experiments on convective in-plane orientation of monolayers .....	371

52.	G. R. Ivanov*, A. T. Todorov, A. G. Petrov*	
	Langmuir trough with enhanced performance . . . . .	377
53.	D. Vaknin, K. Kjaer, J. Als-Nielsen, M. Lösche*	
	A new liquid surface neutron reflectometer and its application to the study of DPPC in a monolayer at the air/water interface . . . . .	383
54.	H. Knobloch, W. Knoll*	
	Raman-spectroscopy and imaging with surface plasmon polaritons . . . . .	389
55.	M. Engel, H. Riegler*	
	Studies of monolayer/substrate adhesion as function of the monolayer headgroup charge: DMPE and DMPA . . . . .	395
56.	M. Paudler, J. Ruths, B. Alberti, H. Riegler*	
	Ellipsometric studies of behenic acid at the air-water interface . . . . .	401
57.	L. F. Chi, R. R. Johnston, H. Ringsdorf*	
	Epifluorescence microscopy studies of fatty acid monolayers: domain formation induced by polymeric gegenions . . . . .	409
58.	B. Alberti, I. R. Peterson*	
	A novel configuration for the optical characterization of waveguiding layers . . . . .	415
59.	R. Lawall, H. Knobloch, W. Knoll*	
	Surface-plasmon optical characterization of asymmetric soap films . . . . .	421
60.	H. Ringsdorf*, J. Venzmer, F. M. Winnik	
	Fluorescence studies of hydrophobically-modified poly( <i>N</i> -isopropylacryl- amides) or how to play accordion on a liposome . . . . .	427
61.	C. A. Helm*, J. N. Israelachvili	
	The role of the hydrophobic force in bilayer adhesion and fusion . . . . .	433
62.	B. Rapp, M. Eberhardt, H. Gruler*	
	From monomolecular films to bulk liquid crystals . . . . .	439
63.	P. Muller*, F. Gallet	
	Growth of anisotropic domains in a Langmuir monolayer . . . . .	445
64.	I. G. Voigt-Martin*, M. Schumacher, P. Simon, M. Honig	
	Structure analysis of discotic, sanidic and ferroelectric crystals and liquid crystals using electron microscopy . . . . .	451
65.	A. Dietrich, H. Möhwald*, G. Brezesinski	
	Polymorphic domains in monolayers of isomeric triple-chain phospho- lipids . . . . .	457
66.	S. Kirstein, H. Möhwald*	
	J-aggregates prepared by adsorption at monolayer/water interfaces . . . . .	463

\* The asterisk indicates the name of the author to whom inquiries should be addressed.