



## CONTENTS

Preface .....	v
 <b>Opening Lecture</b>  	
Progress in Instrumentation for Crystallography .....	3
<i>A. Guinier</i>	
 <b>Insertions and Instrumentation</b>  	
Wigglers and Undulators as Synchrotron Radiation Sources .....	15
<i>W. A. Ortiz</i>	
X-Ray Diffraction Instrumentation for Synchrotron Sources .....	24
<i>R. Fourme</i>	
Improved Optics for X-Ray Absorption Spectroscopy in Dispersive Mode Using Synchrotron Radiation .....	33
<i>H. Tolentino, E. Dartyge, A. Fontaine and G. Tourillon</i>	
X-Ray Position Sensitive Detectors for Synchrotron Radiation Applications . . .	42
<i>R. Fourme</i>	
Solid State Parallel Detectors .....	53
<i>A. R. B. de Castro</i>	
Position Sensitive Gas Counters for X-Ray Detection .....	72
<i>E. L. A. Macchione, K. Koide, M. A. L. Leite, S. Sini, O. Dietzsch and A. Bairrio Nuevo Jr</i>	
Standard Electronic Instrumentation for Synchrotron Radiation Experiments .....	75
<i>S. Zimmermann</i>	
High and Ultra-High Vacuum Pumping Techniques: Applications in Accelerators and Storage Rings .....	81
<i>G. Schäfer</i>	

Single-Mode, Low Gain Short Period Wiggler FEL Oscillators . . . . .	91
<i>A. Serbêto</i>	

### Applications

Powder Diffractometry using Synchrotron Radiation . . . . .	107
<i>G. Will</i>	
Synchrotron Radiation Research on Semiconductor Interfaces: Surface Crystallography . . . . .	120
<i>G. Rossi</i>	
Inelastic Scattering of X-Rays . . . . .	150
<i>J. Peisl</i>	
X-Ray Scattering under Total External Reflection . . . . .	160
<i>J. Peisl</i>	
SAXS Experiments using Synchrotron Sources . . . . .	170
<i>A. Craievich</i>	
Small Angle X-Ray Scattering from Proteins in Solution . . . . .	187
<i>C. F. de Souza, I. L. Torriani, C. F. S. Bonafé, N. C. Meirelles and P. Vachette</i>	
Synchrotron Radiation Studies in Lyotropic Nematic Liquid Crystals . . . . .	196
<i>A. M. Figueiredo Neto</i>	
Local Atomic Structure Study of Amorphous Ni <sub>2</sub> Zr by X-Ray Anomalous Scattering using Synchrotron Radiation (Abstract only) . . . . .	212
<i>J. C. de Lima, J. M. Tonnerre and D. Raoux</i>	
X-Ray Lithography: An Introduction . . . . .	214
<i>C. Khan Malek</i>	
Photoelectron and Photoionization Mass Spectroscopy Si <sub>2</sub> (CH <sub>3</sub> ) <sub>6</sub> in the Vicinity of the Si 2p Region . . . . .	236
<i>G. G. B. de Souza, A. C. de A. e Souza, I. Nenner, P. Morin and P. Lablanquie</i>	
Recent Exeperiments on Gas Spectroscopy . . . . .	245
<i>I. Iga</i>	

**Project and Instrumentation at LNLS**

<b>Brief History and Objectives of the Laboratório Nacional de Luz Síncrotron . . . . .</b>	<b>255</b>
<i>C. E. T. Gonçalves de Silva</i>	
<b>The LNLS Project . . . . .</b>	<b>259</b>
<i>D. Wisnivesky</i>	
<b>Scientific Instrumentation at LNLS . . . . .</b>	<b>279</b>
<i>A. Craievich and A. R. B. de Castro</i>	
<b>A Gas Phase Work Station for the Brazilian National Synchrotron Laboratory . . . . .</b>	<b>292</b>
<i>G. G. B. de Souza</i>	