

CONTENTS

1	Introduction	1
1.1	Historical Perspectives	4
1.2	Basic Principles of FIA	4
1.3	General Characteristics of FI Methods for Separation and Preconcentration	10
1.4	Fundamental Aspects of FI Separation and Preconcentration	11
1.5	Liquid Chromatographic and FI Separation Methods	18
2	General Instrumentation	21
2.1	Liquid Delivery Devices	21
2.2	Injection and Multi-functional Valves	29
2.3	Transport Conduits and Mixing Reactors	35
2.4	Detectors	38
3	Liquid-liquid Extraction	47
3.1	General	47
3.2	Instrumentation	48
3.3	Theoretical Aspects of FI Liquid-liquid Extraction	59
3.4	FI Manifolds for Liquid-liquid Extraction	63
3.5	Coupling of FI Liquid-liquid Extraction Systems to Various Detectors	74
4	Sorption	85
4.1	Introduction	85
4.2	Classification of FI Column Techniques	86
4.3	Dispersion in FI Column Preconcentration Systems	87
4.4	Practical Considerations in the Design and Operation of FI Column Preconcentration Systems	90
4.5	Column Loading	93
4.6	FI On-line Column Separation and Preconcentration Systems	103
4.7	Sorption Preconcentration for Solid Phase Optosensing	124
5	Gas-liquid Separation	129
5.1	Introduction	129
5.2	Gas-liquids Separators for FIA	131
5.3	FI Gas-diffusion Separation Systems	138
5.4	Coupling of Fi Gas-diffusion Separation Systems to Various Detectors	142
5.5	FI Vapour-generation Systems	148

6	Dialysis	159
6.1	General	159
6.2	Fundamental Aspects of FI On-line Dialysis	160
6.3	Dialyzers	162
6.4	On-line Dialysis Membranes	163
6.5	FI On-line Dialysis Manifolds	164
6.6	Coupling of FI On-line Dialysis to Various Detectors	166
7	Precipitation	169
7.1	Introduction	169
7.2	On-line Precipitate Collectors	170
7.3	FI Manifolds for On-line Precipitation-dissolution	175
7.4	Some Fundamental Aspects of On-line Precipitation-dissolution	183
7.5	FI Variables for On-line Precipitation-dissolution Systems	186
7.6	FI Methods With On-lien Continuous Precipitation	188
8	Environmental and Agricultural Applications	197
8.1	General	197
8.2	Waters	197
8.3	Plant and Animal Tissues	204
8.4	Beverages	206
8.5	Milk	208
8.6	Soils and Sediments	209
8.7	Other Agricultural Samples	210
8.8	Selected Analytical Procedures	211
9	Clinical and Pharmaceutical Applications	221
9.1	General	221
9.2	Blood and Serum	221
9.3	Urine	224
9.4	Pharmaceuticals	226
9.5	Selected Procedures	229
10	References	239
11	Index	253