
CONTENTS

Preface ix

Part 1 Fundamentals of Chemistry for Environmental Engineering

1	Introduction	3
2	Basic Concepts from General Chemistry	8
3	Basic Concepts from Physical Chemistry	43
4	Basic Concepts from Organic Chemistry	94
5	Basic Concepts from Equilibrium Chemistry	164
6	Basic Concepts from Colloid Chemistry	216
7	Basic Concepts from Biochemistry	229
8	Basic Concepts from Nuclear Chemistry	250

Part 2 Water and Wastewater Analysis

9	Introduction	271
10	Basic Concepts from Quantitative Chemistry	279
11	Instrumental Methods of Analysis	304
12	Turbidity	331
13	Color	337
14	Standard Solutions	343
15	pH	351
16	Acidity	357
17	Alkalinity	364
18	Hardness	377
19	Residual Chlorine and Chlorine Demand	385

viii CONTENTS

20	Chlorides	400
21	Dissolved Oxygen	405
22	Biochemical Oxygen Demand	416
23	Chemical Oxygen Demand	433
24	Nitrogen	439
25	Solids	454
26	Iron and Manganese	464
27	Fluoride	470
28	Sulfate	476
29	Phosphorus and Phosphate	482
30	Grease	488
31	Volatile Acids	494
32	Gas Analysis	503
33	Trace Inorganics	514
	Index	521