

TABLE OF CONTENTS

Preface	ix
Introduction and Results	1
Chapter I. Theory of Analytic Semigroups	8
1.1 Generation Theorem for Analytic Semigroups	8
1.2 Fractional Powers	19
1.3 The Linear Cauchy Problem	31
1.4 The Semilinear Cauchy Problem	38
Chapter II. Sobolev Imbedding Theorems	46
2.1 Hölder Spaces and Sobolev Spaces	46
2.2 Interpolation Theorems	48
2.3 Imbeddings of the Spaces $H^{m,p}(\mathbf{R}^n)$	74
2.4 Imbeddings of the Spaces $H^{m,p}(\Omega)$	86
Chapter III. L^p Theory of Pseudo-Differential Operators	93
3.1 Generalized Sobolev Spaces and Besov Spaces	93
3.2 Fourier Integral Operators	97
3.2A Symbol Classes	97
3.2B Phase Functions	99
3.2C Oscillatory Integrals	100
3.2D Fourier Integral Operators	102
3.3 Pseudo-Differential Operators	102
Chapter IV. L^p Approach to Elliptic Boundary Value Problems	109
4.1 The Dirichlet Problem	109
4.2 Formulation of a Boundary Value Problem	111
4.3 Reduction to the Boundary	115
4.4 Operator $\mathcal{H}$	120
Chapter V. Proof of Theorem 1	122
5.1 Regularity Theorem for Problem (*)	122
5.2 Uniqueness Theorem for Problem (*)	126
5.3 Existence Theorem for Problem (*)	127
5.3A Proof of Theorem 5.7	128
5.3B Proof of Proposition 5.10	134
Chapter VI. Proof of Theorem 2	137

6.1	<i>A Priori</i> Estimates	137
6.2	Generation of Analytic Semigroups	142
Chapter VII. Proof of Theorems 3 and 4		148
7.1	Fractional Powers and Imbedding Theorems	148
7.2	Semilinear Initial-Boundary Value Problems	153
7.2A	Proof of Theorem 3	153
7.2B	Proof of Theorem 4	153
Appendix: The Maximum Principle		157
References		159
Index		161