

CONTENTS

PART ONE INTRODUCTORY

Chapter 1	Cycles in Ceramic History	3
Chapter 2	Processing Controls in Technical Ceramics	11

PART TWO POWDERS

Chapter 3	Active Powders	21
Chapter 4	Characterization and Process Interactions	31
Chapter 5	Physical Characterization Terminology	35
Chapter 6	Physical Characterization Techniques for Particles	39
Chapter 7	Structure and Properties of Agglomerates	61
Chapter 8	Characterization of Agglomerates with Transmission Electron Microscopy	75
Chapter 9	Bayer-Processed Aluminas	85
Chapter 10	Grinding of Aluminas	101
Chapter 11	Theories of Grinding	105
Chapter 12	Reactive Powders from Solution	125
Chapter 13	Lattice Strain in Alumina Powders	141
Chapter 14	Agglomeration Effects on the Sintering of Alumina Powders Prepared by Autoclaving Aluminum Metal	153
Chapter 15	Layer-Silicate Minerals	177

PART THREE PARTICULATE-WATER SYSTEMS

Chapter 16	The Structure of Water and Its Role in Clay-Water Systems	193
Chapter 17	Particle-Size Distribution and Slip Properties	211
Chapter 18	Viscosity of Concentrated Newtonian Suspensions	227
Chapter 19	The Rheology of Organic Binder Solutions	235
Chapter 20	Mixedness of Suspensions	253
Chapter 21	Quantitative Theory of Cracking and Warping During the Drying of Clay Bodies	261
Chapter 22	Mineralogy of Curing and Drying of a Refractory Concrete	277

PART FOUR GREEN-BODY FORMATION AND MICROSTRUCTURE

Chapter 23	Firing-The Proof Test for Ceramic Processing	291
Chapter 24	Effect of Process Optimization Properties of Alumina Sintered Under Rate Control	307
Chapter 25	Dynamic Particle Stacking	321
Chapter 26	Particle Compaction	343
Chapter 27	Adhesion Forces in Agglomeration Processes	357
Chapter 28	Strength and Microstructures of Dried Clay Mixtures	377
Chapter 29	Extrusion Defects	391

PART FIVE PROCESSES AND APPLICATIONS

Chapter 30	Tape Casting of Ceramics	411
Chapter 31	Zinc Orthotitanate Powders for Thermal-Control Coatings	449
Chapter 32	Characterization of Powders for Thick Films and Capacitors	463
Chapter 33	Future Directions in Processing Research	471
Index		479