

Contents

List of Authors — IX

Part 1: Measurement and properties

Jørgen Skibsted

Chapter 1

Characterization of supplementary cementitious materials and their quantification in cement blends by solid-state NMR — 3

Sabrina Galluccio, Herbert Pöllmann

Chapter 2

Mineralogical quantification of cements, wastes and supplementary cementitious materials — 33

Katrin Schollbach, Sieger van der Laan

Chapter 3

Microstructure analysis with quantitative phase mapping using SEM-EDS and Phase Recognition and Characterization (PARC) Software: applied to steelmaking slag — 57

H. Pöllmann, R. Kilian

Chapter 4

The use of μ XRF in the characterization of industrial wastes and pozzolanes — 97

Part 2: Characterization of industrial residues

Stefan Stöber, Herbert Pöllmann

Chapter 5

Characterization of supplementary cementitious materials: Brown coal fly ashes — 165

Andreas Ehrenberg

Chapter 6

Iron and steel slags: from wastes to by-products of high technical, economical and ecological advantages — 203

Thomas A. Bier, Eva Kränzlein, Elsa Qoku, Sandra Waida

Chapter 7

Utilization of Supplementary cementitious materials (SCM) in Portland cement, alkali activated and ternary binders — 253

Chubaakum Pongener, Koweteu Sekhamo, Rajib Lochan Goswamee

Chapter 8

Study of some physico chemical properties of plastic clays belonging to Girujan deposits from Chumoukedima Nagaland, India and their prospective industrial applications — 297

Part 3: Use and application of industrial residues

N. B. Singh

Chapter 9

Conversion of CO₂ into useful products — 319

Mirja Illikainen, Jenni Kiventerä

Chapter 10

Mine tailings as precursors for alkali-activated materials and ettringite binders — 345

Thomas Neumann

Chapter 11

Industrial waste as fuel and raw material in the cement industry — 361

Kai Tandon, Soraya Heuss-Aßbichler

Chapter 12

Fly ash from municipal solid waste Incineration: from industrial residue to resource for zinc — 379

Iphigenia Anagnostopoulos, Soraya Heuss-Aßbichler

Chapter 13

Residues of industrial wastewater treatment: Hazardous waste or anthropogenic resource? — 403

Susmita Sarmah, Jitu Saikia, Pinky Saikia, Champa Gogoi,
Rajib Lochan Goswamee

Chapter 14

Composites of some sustainable siliceous materials for the removal of fluoride from ground water and immobilization of the sludge generated — 433

Part 4: Residues from mining

Andreas Kamradt

Chapter 15

Characterization and mineral processing options of “Kupferschiefer”-type low-grade black shale ore from mining dumps in Central Germany — 455

Tim Rödel, Stefan Kiefer, Gregor Borg

Chapter 16

Rare-earth elements in phosphogypsum and mineral processing residues from phosphate-rich weathered alkaline ultramafic rocks, Brazil — 505

Kássia L. L. Marinho, Bruno A. M. Figueira, Dorsan S. Moraes,
Oscar J. C. Fernandez, Marcondes L. da Costa

Chapter 17

The Mn oxides tailing from Amazon Region as low-cost raw material to synthesis of shigaite-type phase — 541

Leonardo Boiadeiro Ayres Negrão, Herbert Pöllmann,
Marcondes Lima da Costa

Chapter 18

Eco-cements out of Belterra Clay: An extensive Brazilian bauxite overburden to produce low-CO₂ eco-friendly calcium sulphoaluminate based cements — 553

Index — 581