

Table of Contents

Chapter 1

Cathodoluminescence in Geosciences: An Introduction

M. PAGEL, V. BARBIN, P. BLANC, D. OHNENSTETTER 1

Chapter 2

Physical Parameters for the Identification of Luminescence Centres in Minerals

G. WALKER 23

Chapter 3

Information Encoded in Cathodoluminescence Emission Spectra

P. D. TOWNSEND, A. P. ROWLANDS 41

Chapter 4

Importance of Instrumental and Experimental Factors on the Interpretation of Cathodoluminescence Data from Wide Band Gap Materials

G. RÉMOND, M. R. PHILLIPS, C. ROQUES-CARMES 59

Chapter 5

Systematic Cathodoluminescence Spectral Analysis of Synthetic Doped Minerals:

Anhydrite, Apatite, Calcite, Fluorite, Scheelite and Zircon

P. BLANC, A. BAUMER, F. CESBRON, D. OHNENSTETTER,
G. PANCZER, G. RÉMOND 127

Chapter 6

The Status of the Standards Program of the Society for Luminescence Microscopy and Spectroscopy

D. J. MARSHALL, O. C. KOPP 161

Chapter 7

Geologic Application of Cathodoluminescence of Silicates

KARL RAMSEYER, JOSEF MULLIS 177

*Chapter 8*Cathodoluminescence Microcharacterisation
of Silicon Dioxide Polymorphs

M. A. STEVENS KALCEFF, M. R. PHILLIPS, A. R. MOON, W. KALCEFF 193

*Chapter 9*Brittle Deformation in Sandstone Diagenesis as Revealed
by Scanned Cathodoluminescence Imaging
with Application to Characterization of Fractured Reservoirs

K. L. MILLIKEN, S. E. LAUBACH 225

Chapter 10

High-Resolution Cathodoluminescence Studies of Feldspar Minerals

J. GÖTZE, M. R. KRBETSCHEK, D. HABERMANN, D. WOLF 245

Chapter 11

Application of Cathodoluminescence to Carbonate Diagenesis

H. G. MACHEL 271

*Chapter 12*Cathodoluminescence of Carbonate Shells:
Biochemical vs Diagenetic Process

V. BARBIN 303

*Chapter 13*Quantitative High Resolution Spectral Analysis
of Mn^{2+} in Sedimentary Calcite

D. HABERMANN, R. D. NEUSER, D. K. RICHTER 331

*Chapter 14*Systems of Interacting Luminescence Centers in Natural Diamonds:
Laser-Induced Time-Resolved and Cathodoluminescence Spectroscopy

G. PANCZER, M. GAFT, A. MARFUNIN 359

*Chapter 15*Use of Cathodoluminescence for U-Pb Zircon Dating by Ion Microprobe:
Some Examples from the Western Alps

D. RUBATTO, D. GEBAUER 373

*Chapter 16*A Combination of Single Zircon Dating by TIMS
and Cathodoluminescence Investigations on the Same Grain:
The CLC-Method – U-Pb Geochronology For Metamorphic Rocks

ULRIKE POLLER 401

Chapter 17

Relevance of Cathodoluminescence for the Interpretation
of U-Pb Zircon Ages, with an Example of an Application to a Study
of Zircons from the Saxonian Granulite Complex, Germany

U. KEMPE, T. GRUNER, L. NASDALA, D. WOLF 425

Chapter 18

Cathodoluminescence in Applied Geosciences

J. GÖTZE 457

Chapter 19

Cathodoluminescence as a Tool in Gemstone Identification

J. PONAHL 479

Subject Index 501