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Descrizione fisica	1 online resource (XIII, 240 p. 125 illus., 102 illus. in color.)
Disciplina	551.9
Soggetti	Geochemistry Fossil fuels Quality control Reliability Industrial safety Environmental monitoring Geology Environmental sciences Fossil Fuels (incl. Carbon Capture) Quality Control, Reliability, Safety and Risk Monitoring/Environmental Analysis Environmental Science and Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1-Introduction -- Chapter 2-Historical perspective on identifying and controlling spontaneous combustion -- Chapter 3-Laboratory experiment for evaluating characteristics of spontaneous combustion -- Chapter 4-Analytical model developed to estimate self-heating potential -- Chapter 5-Numerical modeling of self-heating event and preventive measures -- Chapter 6-Interpretation of mine atmosphere monitoring data.
Sommario/riassunto	This book aims to understand, analyze and mitigate the harmful impacts of spontaneous coal combustion in underground mines, a thermal phenomenon that triggers fires and explosions threatening the

safety of mine workers globally. Based on experimental and theoretical research findings, the book emphasizes three essential questions that are fundamental to understand spontaneous coal combustion: What are the root causes? How to evaluate the causative factors to determine the activity of coal? and How to bring this issue under control in real longwall panel? Readers are introduced to experimental techniques applied to investigate the basic molecular structure of coal and evaluate chemical properties that induce self-heating behavior, theoretical analyses to predict the extrinsic effect on low temperature oxidation of coal in experimental scale and full-size longwall panel, and preventive measures to mitigate this issue using methods for retardant screening, numerical simulations for optimal grouting and nitrogen injections, and case studies analyzing thermal events using mine atmosphere gas monitoring data. The book will be of interest to students and researchers studying mining engineering and chemistry, as well as engineers and practitioners involved in coal mine development and risk assessment. .

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