

## Table of contents

|            |                                                                                                                                                                  |     |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
|            | Foreword<br><i>Qihu Qian</i>                                                                                                                                     | vii |
|            | Preface<br><i>Norbert Gebbeken</i>                                                                                                                               | ix  |
| Chapter 1  | Modeling of concrete materials under extreme loads<br><i>J.E. Crawford, Y. Wu, J.M. Magallanes &amp; S. Lan</i>                                                  | 1   |
| Chapter 2  | Three-dimensional numerical modelling of concrete-like materials<br>subjected to dynamic loadings<br><i>Q. Fang &amp; J.H. Zhang</i>                             | 33  |
| Chapter 3  | Performance and suitability of ultra-high-performance concrete under<br>a broad range of dynamic loadings<br><i>K. Thoma, A. Stolz &amp; O. Millon</i>           | 65  |
| Chapter 4  | Numerical quantification of factors influencing high-speed impact tests<br>of concrete material<br><i>H. Hao, Y. Hao &amp; Z.X. Li</i>                           | 97  |
| Chapter 5  | Masonry under dynamic actions—experimental investigations,<br>material modeling and numerical simulations<br><i>N. Gebbeken, T. Linse &amp; T. Araújo</i>        | 131 |
| Chapter 6  | Experimental versus analytical response of structures to blast loads<br><i>A.G. Razaqpur, M. Campidelli &amp; S. Foo</i>                                         | 163 |
| Chapter 7  | Buildings protection against accidental explosions in petrochemical facilities<br><i>B.M. Luccioni &amp; R.D. Ambrosini</i>                                      | 195 |
| Chapter 8  | Integration of uncertainty modelling, structural reliability and decision<br>theory to provide optimal blast protection to infrastructure<br><i>M.G. Stewart</i> | 221 |
| Chapter 9  | Collapse mechanism of seawall protective structure by huge tsunami<br><i>N. Ishikawa, T. Arikawa, M. Beppu &amp; H. Tatesawa</i>                                 | 253 |
| Chapter 10 | Impact effects on concrete<br><i>Q.M. Li</i>                                                                                                                     | 281 |
| Chapter 11 | First draft of performance-based design code for Japanese protective structures<br><i>Y. Sonoda &amp; H. Tamai</i>                                               | 305 |
| Chapter 12 | Recent studies on buried explosions in dry soils in proximity<br>to buried structures<br><i>D.Z. Yankelevsky, Y.S. Karinski &amp; V.R. Feldgun</i>               | 331 |
| Chapter 13 | Craters produced by explosions on, above and under the ground<br><i>R.D. Ambrosini &amp; B.M. Luccioni</i>                                                       | 365 |
|            | Author index                                                                                                                                                     | 397 |