

Contents

| | |
|---|------|
| <i>Dedication of Large Meteorite Impacts and Planetary Evolution VI to Álvaro Penteadó Crósta</i> Wolf Uwe Reimold and Christian Koeberl | vii |
| <i>Introduction</i> Wolf Uwe Reimold and Christian Koeberl | xiii |
| REGIONAL IMPACT RECORDS | |
| 1. <i>Impact cratering record of Sweden—A review</i> Sanna Holm-Alwmark | 1 |
| 2. <i>Australian impact cratering record: Updates and recent discoveries</i> Raiza R. Quintero, Aaron J. Cavosie, Morgan A. Cox, Katarina Miljković, and Allison Dugdale | 41 |
| IMPACT CRATERS AND IMPACTITES | |
| 3. <i>The Cleanskin impact structure, Northern Territory and Queensland, Australia: A reconnaissance study</i> T. Kenkmann, P.W. Haines, I.P. Sweet, and K. Mitchell | 69 |
| 4. <i>Tabun Khara Obo impact crater, Mongolia: Geophysics, geology, petrography, and geochemistry</i> Tsolmon Amgaa, Dieter Mader, Wolf Uwe Reimold, and Christian Koeberl | 81 |
| 5. <i>Shock metamorphism in samples from the Shili impact structure (Kazakhstan) and discussion of its size and age</i> Ludovic Ferrière, Siddharth Rajpriye, Pavel Sapozhnikov, and Baurzhan Baimagambetov | 133 |
| 6. <i>Distinguishing friction- from shock-generated melt products in hypervelocity impact structures</i> John G. Spray and Marc B. Biren | 147 |
| 7. <i>Micro-X-ray fluorescence (μXRF) analysis of proximal impactites: High-resolution element mapping, digital image analysis, and quantifications</i> Pim Kaskes, Thomas Déhais, Sietze J. de Graaff, Steven Goderis, and Philippe Claeys | 171 |
| 8. <i>Petrographic and chemical studies of the Cretaceous-Paleogene boundary sequence at El Guayal, Tabasco, Mexico: Implications for ejecta plume evolution from the Chicxulub impact crater</i> Tobias Salge, Roald Tagle, Ralf-Thomas Schmitt, and Lutz Hecht | 207 |

| | |
|--|-----|
| 9. Genesis of the mafic granophyre of the Vredefort impact structure (South Africa): Implications of new geochemical and Se and Re-Os isotopes | 235 |
| Wolf Uwe Reimold, Toni Schulz, Stephan König, Christian Koeberl, Natalia Hauser, Dschamilja Wannek, and Ralf-Thomas Schmitt | |
| 10. Inhomogeneous distribution of lithic clasts within the Daskop granophyre dike, Vredefort impact structure: Implications for emplacement of impact melt in large impact structures | 255 |
| Matthew S. Huber, Elizaveta Kovaleva, Martin D. Clark, and Stephen A. Prevec | |
| EARLY ARCHEAN IMPACTS | |
| 11. Sedimentation across the Paraburdoo spherule layer: Implications for the Neoproterozoic Earth system | 269 |
| Katrina S. Souders, Alexandra K. Davatzes, Brady A. Ziegler, Steven Goderis, Thomas Déhais, and Philippe Claeys | |
| 12. Terrestrial and extraterrestrial chemical components of early Archean impact spherule layers from Fairview Gold Mine, northern Barberton greenstone belt, South Africa | 297 |
| Grace Juliana Gonçalves de Oliveira, Wolf Uwe Reimold, Álvaro Penteado Crósta, Natalia Hauser, Christian Koeberl, Dieter Mader, Ralf-Thomas Schmitt, and Tanja Mohr-Westheide | |
| 13. New field, geochemical, and petrographic evidence from the Bon Accord nickel body: Contamination of a komatiite by deep mantle or meteorite source? | 333 |
| Matthew S. Huber, Frederick Roelofse, Christian Koeberl, and Marian Tredoux | |
| GEOPHYSICAL INVESTIGATIONS OF IMPACT STRUCTURES | |
| 14. Anisotropy of magnetic susceptibility (AMS) of impact melt breccia and target rocks from the Dhala impact structure, India | 351 |
| Anuj Kumar Singh, Jayanta Kumar Pati, Shiva Kumar Patil, Wolf Uwe Reimold, Arun Kumar Rao, and Om Prakash Pandey | |
| 15. Systematic survey of K, Th, and U signatures in airborne radiometric data from Australian meteorite impact structures: Possible causes of circular features and implications | 373 |
| Cheikh Ahmadou Bamba Niang, David Baratoux, Dina Pathé Diallo, Pierre Rochette, Mark W. Jessell, Wolf U. Reimold, Sylvain Bouley, Olivier Vanderhaeghe, Gayane Faye, and Philippe Lambert | |
| SHOCK METAMORPHIC INVESTIGATIONS—TOWARD NEW HORIZONS | |
| 16. The first microseconds of a hypervelocity impact | 407 |
| Marie Arnika Gärtner, Matthias Ebert, Martin Schimmerohn, Stefan Hergarten, Frank Schäfer, Thomas Kenkmann, and Max Gulde | |
| 17. Shock-twinned zircon in ejecta from the 45-m-diameter Kamil crater in southern Egypt | 419 |
| Aaron J. Cavosie and Luigi Folco | |
| 18. Revealing microstructural properties of shocked and tectonically deformed zircon from the Vredefort impact structure: Raman spectroscopy combined with SEM microanalyses | 431 |
| Elizaveta Kovaleva and Dmitry A. Zamyatin | |

| | |
|--|-----|
| 19. Shock deformation microstructures in xenotime from the Spider impact structure, Western Australia | 449 |
| Morgan A. Cox, Aaron J. Cavosie, Michael Poelchau, Thomas Kenkmann, Phil A. Bland, and Katarina Miljković | |
| 20. Extreme plastic deformation and subsequent Pb loss in shocked xenotime from the Vredefort Dome, South Africa | 465 |
| Aaron J. Cavosie, Christopher L. Kirkland, Steven M. Reddy, Nicholas E. Timms, Cristina Talavera, and Maya R. Pincus | |
| 21. Comparison of stress orientation indicators in Chicxulub's peak ring: Kinked biotites, basal PDFs, and feather features | 479 |
| M. Ebert, M.H. Poelchau, T. Kenkmann, S.P.S. Gulick, B. Hall, J. Lofi, N. McCall, and A.S.P. Rae | |
| 22. U-Pb geochronology of apatite crystallized within a terrestrial impact melt sheet: Manicouagan as a geochronometer test site | 495 |
| Maree McGregor, Christopher R.M. McFarlane, and John G. Spray | |
| 23. Shock effects in feldspars: An overview | 507 |
| Annemarie E. Pickersgill, Steven J. Jaret, Lidia Pittarello, Jörg Fritz, and R. Scott Harris | |
| POST-IMPACT HYDROTHERMALISM | |
| 24. Impact-induced hydrothermal dissolution in pyroxene: Petrographic and geochemical characterization of basalt-dominated polymict impact breccias from the Vargeão Dome, Brazil | 537 |
| Jennifer Epstein, Lidia Pittarello, Álvaro P. Crósta, and Christian Koeberl | |
| 25. Effect of initial water composition on thermodynamic modeling of hydrothermal alteration in basalt—A case study of the Vargeão Dome impact structure | 551 |
| Jitse Alsemgeest and Luis F. Auqué | |
| 26. $^{40}\text{Ar}/^{39}\text{Ar}$ age evidence for an impact-generated hydrothermal system in the Devonian Siljan crater, Sweden | 569 |
| Maria Herrmann, Carl Alwmark, and Michael Storey | |
| STRUCTURAL GEOLOGY AND MORPHOMETRY OF IMPACT STRUCTURES—ON EARTH AND MARS | |
| 27. Dynamics of collapse of an impact central uplift: Evidence from folds and faults in the collar of the Vredefort Dome, South Africa | 585 |
| Shalene Manzi, Roger L. Gibson, and Asinne Tshibubudze | |
| 28. Rampart craters on Earth | 607 |
| Gerwin Wulf and Thomas Kenkmann | |
| 29. Mars Crater Database: A participative project for the classification of the morphological characteristics of large Martian craters | 629 |
| A. Lagain, S. Bouley, D. Baratoux, C. Marmo, F. Costard, O. Delaa, A. Pio Rossi, M. Minin, G.K. Benedix, et al. | |