

Wednesday, March 9, 2011
SHOCKED MINERAL GRAINS: RECORDERS OF IMPACTS
3:30 p.m. Montgomery Ballroom

Chairs: Aaron Cavosie
 Matthew Wielicki

- 3:30 p.m. Abramov O. * Kring D. A. Mojzsis S. J.
[*Modeling of Impact-Induced Age Resetting and Partial Pb-Loss in Zircon Grains*](#) [#2674]
 This study explores impact conditions under which zircons in the target may undergo complete or partial Pb-loss. The models presented here suggest either complete Pb-loss or none at all, within most impact craters and ejecta blankets.
- 3:45 p.m. Wielicki M. M. * Harrison T. M.
[*Ti-in-Zircon Thermometry and Trace Element Geochemistry of Impact Produced Zircons: Implications for Hadean Zircons*](#) [#2346]
 We present Ti-in-zircon thermometry and trace-element geochemistry of zircons isolated from preserved terrestrial impact melt sheets to better constrain the role of impacts in the formation of the Hadean zircons from Western Australia.
- 4:00 p.m. Wartho J-A. * van Soest M. C. King D. T. Petruny L. W. Hodges K. V.
[*An \(U-Th\)/He Geochronological Age for the Shallow-Marine Wetumpka Impact Structure, Alabama, USA*](#) [#1524]
 This (U-Th)/He study yields the first geochronological age of 84.4 ± 1.4 Ma (2σ) for the ~7.6-km-diameter Wetumpka impact structure. This age is within error of the Campanian-Santonian stratigraphic boundary age previously suggested for Wetumpka.
- 4:15 p.m. Moser D. E. * Cupelli C. L. Barker I. R. Flowers R. M. Bowman J. R. Wooden J. Hart R.
[*New Zircon Shock Phenomenon for Dating and Reconstruction of Large Impact Basins Revealed by Electron Nanobeam \(EBSD, CL, EDS\), U-Pb, and \(U-Th\)/He Isotopic Analysis of the Vredefort Dome*](#) [#2462]
 We present new microstructural (EBSD, CL), U-Pb, and (U-Th)/He isotopic data on zircon microcrystals from bedrock across ~65 km radial distance of the deeply eroded collar and central uplift of the 2.020-Ga Vredefort impact basin of South Africa.
- 4:30 p.m. Cavosie A. J. * Moser D. E. Barker I. Radovan H. A. Wooden J.
[*A 3.0 Gyr Geologic History of the Vredefort Impact Basin Recorded in a Single Grain of Sand*](#) [#2192]
 We describe a single detrital shocked zircon from modern sand that records a 3 Ga history of the evolution of the giant Vredefort Dome impact basin. This result highlights the importance of detrital mineral records for reconstructing ancient impact events.

- 4:45 p.m. Erickson T. M. * Cavosie A. J. Radovan H. A. Moser D. E. Wooden J.
[Microstructural and Isotopic Constraints on Impact Basin Provenance of Detrital Shocked Minerals in the Vaal River, South Africa](#) [#2208]
We present *in situ* U-Th-Pb geochronology that confirms the Vredefort Dome as the origin of detrital shocked zircon found in modern sediments of the Vaal River at distal locations (>750 km) from the impact structure.
- 5:00 p.m. Cintrón N. O. * Cavosie A. J. Gibbon R. J. Radovan H. A. Moser D. E. Wooden J.
[In Situ U-Th-Pb Geochronology of Detrital Shocked Monazite in Pleistocene Fluvial Deposits Along the Vaal River, South Africa](#) [#2253]
Here we report microstructural and *in situ* U-Th-Pb age data for detrital shocked monazite grains found in a Pleistocene (ca. 1.6 Ma) fluvial deposit near Windsorton South Africa, 500 km downstream from the Vredefort Dome.