

Karen V. Smit

Orcid ID [0000-0002-0476-7095](#)

Google Scholar [profile](#)

Folder with publications: [here](#)

PERSONAL INFORMATION

Citizenship: South Africa

Languages: English, Afrikaans

Email: karen.smit@wits.ac.za

POSITIONS HELD

March 2022 – present **Senior Lecturer in Diamond Geology and Isotope Geochemistry**
School of Geosciences, University of the Witwatersrand, South Africa
<https://www.wits.ac.za/geosciences/>

2014 – present **Visiting Investigator**
Department of Terrestrial Magnetism (DTM), Washington DC.
<http://epl.carnegiescience.edu/people/visiting>

Feb 2021 – Jan 2022 Research Fellow
University of Alberta, Edmonton, Canada.

Research topics: 1) Trace element compositions of sublithospheric CLIPPIR and lithospheric diamonds. 2) Age and origin of the cratonic lithosphere below Grib (Baltic shield). 3) Diamond formation below the central Kaapvaal craton that document 2 billion years of craton evolution. 4) Age of the cratonic lithosphere below the Ancient Gneiss Complex, eastern Kaapvaal. 5) Editorial duties for the Diamond volume: 'Reviews in Mineralogy and Geochemistry'.

Feb 2016 – Oct 2020 Research Scientist
Gemological Institute of America (GIA), New York City.
<https://www.gia.edu/build-research-career>

Brief job description: 1) Research the origin of natural, treated and synthetic diamonds, to understand the spectroscopic characteristics that can tell them apart. 2) Work in the Identification Department to interpret spectroscopy results and determine whether client-submitted diamonds are natural, treated or lab-grown. 3) Work with other Research Scientists and the Engineering team to develop and test spectroscopic devices that can separate natural, treated and synthetic diamonds. Do demonstrations of these devices to clients in the trade. 4) Oversee installation, maintenance and daily operation of the SEM and other spectroscopy instruments in the GIA lab. Train new users on the SEM and its associated CL spectroscopy units. 5) Present results at research conferences and teach educational seminars to the gem and jewelry industry.

Feb 2014 –
Jan 2016

Richard T. Liddicoat Postdoctoral Research Associate
Gemological Institute of America (GIA), New York City.

ACADEMIC QUALIFICATIONS

2009 – 2013

PhD in Geology, University of Alberta, Edmonton, Canada.
Advisor: Thomas Stachel.

PhD thesis title: Age, origin and composition of the Attawapiskat lithospheric mantle and its diamonds (western Superior craton, Canada).

Brief thesis description: Understand the diamond-stable regions of the mantle below the western Superior, and how the failed Midcontinent Rift impacted the diamond budget of the lithosphere. Peridotite and diamond samples showed that there was lithosphere (and diamond) destruction around the time of the Rift. Majority of the diamonds in the Victor mine are from fertile lherzolitic host rocks and formed during the Proterozoic after the thermal effect of the Rift had dissipated.

The regional implications of this project for diamond exploration and resource development are that syn-rift–age kimberlites in this region likely do not have economic quantities of diamond, whereas Jurassic (Victor-age) kimberlites do. The wider implications are that worldwide exploration programmes should not exclusively focus on harzburgitic (G10) and eclogitic (G3/G4) indicator minerals, and that ‘young’ lherzolitic diamond populations (with G9 garnets) can also build economic diamond mines. In the case of Victor, disregarding the lherzolitic signature would have missed a major producer of high value, high clarity, colorless diamonds.

2007 – 2009

MSc in Geochemistry (with distinction), University of Cape Town, South Africa.
Advisors: John J. Gurney, Anton P. le Roex, Stephen H. Richardson, Steven B. Shirey (Carnegie).

MSc thesis title: Sulphide Re-Os Characterisation and Nitrogen Aggregation State of the Ellendale diamonds, Kimberley Province, Australia.

Brief thesis description: During its production, the Ellendale mine produced Fancy Yellow exceptional clarity diamonds. For my MSc, I evaluated the age and paragenesis of a suite of sulphide-bearing Ellendale diamonds. Detailed isotopic work showed that the peridotitic diamonds are lherzolitic rather than harzburgitic, and that they have a Mesoproterozoic rather than an Archaean age. Similar to Victor, Ellendale shows that ‘young’ Proterozoic lherzolitic diamond localities can yield economic mines.

2001 – 2005

BSc (Honours) in Geology, University of Stellenbosch, South Africa.

ANALYTICAL EXPERIENCE

I have high-level expertise in a wide variety of geochemical and spectroscopic analytical techniques.

Expertise in diamonds and inclusions

Diamond morphology, surface textures and color origin

Laser cutting and polishing of diamonds

Inclusion characterization and recovery

Geochemistry

SEM imaging, X-ray mapping and EDS analyses (JEOL FE-SEM and Zeiss EVO MA10)

Microprobe analyses of major elements in silicate minerals (JEOL 8900)

Laser ablation trace element analyses of silicates on Quad-ICP-MS (Perkin Elmer Elan 6000)

‘Offline’ laser ablation trace element analyses of diamonds on an ICP-MS (Element 2 XR)

Trace element analyses (solution) by standard addition on Quad-ICP-MS (iCap Q)

Re-Os, Sr, Nd isotope analyses using TIMS (Thermo Triton, NuTIMS, and DTM 15” mass spectrometer)

Solution isotope analyses of a range of isotopes using a NuSapphire (collision-cell MC-ICP-MS)

Re-PGE analyses by isotope dilution on ICP-MS (Element 2 XR) and MC-ICP-MS (Nu II)

Analyses of oxygen isotopes in eclogitic garnet, carbon + nitrogen isotopes in diamond and sulfur isotopes in sulphide diamond inclusions by SIMS (Cameca NanoSIMS and Cameca 1280)

Spectroscopy

Visible absorption spectroscopy (Perkin Elmer and custom GIA devices)

FTIR spectroscopy and mapping of diamonds (Thermo Nicolet iN10)

Raman spectroscopy and mapping of mineral and fluid inclusions in diamonds and photoluminescence spectroscopy of defects in diamonds (Renishaw inVia, Thermo DXRxi, Witec and custom GIA devices)

Cathodoluminescence imaging and spectroscopy of diamonds (at 77 K) (Zeiss EVO MA10 with Gatan CL2 and MonoCL4 spectroscopy units)

PEER-REVIEWED JOURNAL PUBLICATIONS

19. **K.V. Smit**, E.V. Agasheva, D.G. Pearson and S. Woodland, 2024. *Age and evolution of the lithospheric mantle beneath the Grib kimberlite (NW Russia)*. Mineralogy and Petrology, Proceedings of the 12th International Kimberlite Conference. doi: <https://doi.org/10.1007/s00710-024-00879-w>
18. S. Timmerman, T. Stachel, J.M. Koornneef, **K.V. Smit**, R. Harlou, G.M. Nowell, A.R. Thomson, S.C. Kohn, J.H.F.L. Davies, G.R. Davies, M.Y. Krebs, Q. Zhang, S.E.M. Milne, J.W. Harris, F. Kaminsky, D. Zedgenizov, G. Bulanova, C.B. Smith, I. Cabral Neto, F.V. Silveira, A.D. Burnham, F. Nestola, S.B. Shirey, M.J. Walter, A. Steele and D.G. Pearson, 2023. *Sublithospheric diamond ages and the supercontinent cycle*. Nature 623, 752–756.
17. M.E. Regier, **K.V. Smit**, T.B. Chalk, R.A. Stern, T. Stachel, E.M. Smith, G.L. Foster, Y. Bussweiler, C. Debuhr, A. Burnham, J.W. Harris, and D.G. Pearson, 2023. *Boron isotopes in blue diamond record seawater-derived fluids in the deep mantle*. Earth and Planetary Science Letters, 602, 117923
16. E.M. Smith, **K.V. Smit** and S.B. Shirey, 2022. *Methods and challenges of establishing the geographic origin of diamonds*. Gems and Gemology, 58, 3, 270-288.
15. D. Howell, T. Stachel, R.A. Stern, D.G. Pearson, F. Nestola, M. Hardman, J.W. Harris, A.L. Jaques, S.B. Shirey, P. Cartigny, **K.V. Smit**, S. Aulbach, F. Brenker, D.E. Jacob, E. Thomassot, M.J. Walter, O. Navon, 2020. *Deep carbon through time: The diamond record and its implications for plate tectonics and mantle oxidation state*. Geochimica et Cosmochimica Acta, 275, 99–122.
14. D. Howell, L.C. Loudin, P. L. Diggle, **K.V. Smit**, U.F.S. D’Haenens-Johanssen, A. N. Katrusha, J. Butler, F. Nestola and A.T. Collins, 2019. *Automated FTIR mapping of boron distribution in diamond*. Diamond and Related Materials, 96, 207–215.
13. **K.V. Smit**, S.B. Shirey, E.H. Hauri and R.A. Stern, 2019. *Sulfur isotopes in diamond reveal differences in continent construction*. Science, **364**, 6438, 383–385.
12. **K.V. Smit**, T. Stachel, R.W. Luth and R.A. Stern, 2019. *Evaluating mechanisms for eclogitic diamond growth: an example from Neoproterozoic Zimmi diamonds (West African craton)*. Chemical Geology, 520, 21–32.
11. S. Eaton-Magana, T. Ardon, **K. V. Smit**, C. M. Breeding and J. E. Shigley, 2018. *Natural-Color Pink, Purple, Red, and Brown Diamonds: Band of Many Colors*. Gems and Gemology, **54**, 4, 352–377.
10. **K.V. Smit**, E. Myagkaya, S. Persaud and W. Wang, 2018. *Black diamonds from Marange (Zimbabwe): a result of natural irradiation and graphite inclusions*. Gems and Gemology, **54**, 2, 132–148.
9. **K.V. Smit**, U.F.S. D’Haenens-Johansson, D. Howell, L. Loudin and W. Wang, 2018. *Deformation-related spectroscopic features in natural Type Ib diamonds from Zimmi (West African craton)*. Mineralogy and Petrology, Proceedings of the 11th International Kimberlite Conference. **112**, Supplement 1, 243–257.

8. T. Stachel, A. Banas, S. Aulbach, **K.V. Smit**, P. Wescott, I. Chinn and J. Kong, 2018. *The Victor Mine (Superior Craton, Canada): Neoproterozoic lherzolitic diamonds from a thermally-modified cratonic root*. Mineralogy and Petrology, Proceedings of the 11th International Kimberlite Conference. **112**, Supplement 1, 325–336.
7. **K.V. Smit** and R. Shor, 2017. *Europe's First Diamond Mine: The Geology, Development, and Production of the Lomonosov Deposit in Northwestern Russia*. Gems and Gemology, **53**, 2, 144–167.
6. **K.V. Smit**, S.B. Shirey and W. Wang, 2016. *Type Ib diamond formation and preservation in the West African lithospheric mantle: Re-Os age constraints from sulphide inclusions in Zimmi diamonds*. Precambrian Research, **286**, 152–166.
5. **K.V. Smit**, S. B. Shirey, R. A. Stern, A. Steele and W. Wang, 2016. *Diamond growth from C–H–N–O recycled fluids in the lithosphere: Evidence from CH₄ micro-inclusions and $\delta^{13}\text{C}$ – $\delta^{15}\text{N}$ –N content^[SEP] in Marange mixed-habit diamonds*. Lithos, **265**, 68–81.
4. **K.V. Smit**, D.G. Pearson, T. Stachel and M. Seller, 2014. *Peridotites from Attawapiskat, Canada: Mesoproterozoic reworking of Palaeoarchaeon lithospheric mantle beneath the Northern Superior superterrane*. Journal of Petrology, **55**, 9, 1829–1863.
3. **K.V. Smit**, T. Stachel and R.A. Stern, 2014. *Diamonds in the Attawapiskat area of the Superior craton (Canada): evidence for a major diamond-forming event younger than 1.1 Ga*. Contributions to Mineralogy and Petrology, **167**, 962.
2. **K.V. Smit**, T. Stachel, R.A. Creaser, R.B. Ickert, S.A. Dufrane, R.A. Stern and M. Seller, 2014. *Origin of eclogite and pyroxenite xenoliths from the Victor kimberlite, Canada, and implications for Superior craton formation*. Geochimica et Cosmochimica Acta, **125**, 308–337.
1. **K.V. Smit**, S.B. Shirey, S.H. Richardson, A.P. le Roex and J.J. Gurney, 2010. *Re–Os isotopic composition of peridotitic sulphide inclusions in diamonds from Ellendale, Australia: Age constraints on Kimberley cratonic lithosphere*. Geochimica et Cosmochimica Acta, **74**, 3292–3306.

PEER-REVIEWED BOOK CHAPTERS

3. **K.V. Smit**, S. Timmerman, S. Aulbach, S.B. Shirey, S.H. Richardson, D. Phillips, D.G. Pearson, 2022. *Geochronology of diamonds*. Reviews in Mineralogy and Geochemistry 88:567–636. doi: 10.2138/rmg.2022.88.11
2. J.W. Harris, **K.V. Smit**, Y. Fedortchouk, M. Moore, 2022. *Morphology of monocrystalline diamond and its inclusions*. Reviews in Mineralogy and Geochemistry 88:119–166. doi: 10.2138/rmg.2022.88.02
1. S.B. Shirey, **K.V. Smit**, D.G. Pearson, M.J. Walter, S. Aulbach, F.E. Brenker, H. Bureau, A.D. Burnham, P. Cartigny, T. Chacko, D.J. Frost, E.H. Hauri, D.E. Jacob, S.D. Jacobsen, S.C. Kohn, R.W. Luth, S. Mikhail, O. Navon, F. Nestola, P. Nimis, E.M. Smith, T. Stachel, V. Stagno, R.A. Stern, A. Steele, E. Thomassot, A.R. Thomson, Y. Weiss. *Recent advances in understanding deep mantle carbon from diamond: contributions from the DMGC*, in Whole Earth Carbon: Past to

VOLUME EDITING

3. *Proceedings of the 12th International Kimberlite Conference*.
Special volume in Mineralogy and Petrology. Springer Nature, will be published mid-2025.
<https://link.springer.com/collections/fgfehededc>

Edited by T. Stachel, S. Aulbach, **K.V. Smit**, K. Russell, G. Howarth, B. Elliott, D. G. Pearson.

2. *Natural Diamonds: Their Mineralogy, Geochemistry and Genesis*.
Reviews in Mineralogy and Petrology, vol 88, Mineralogical Society of America, 2022.

Edited by **K.V. Smit**, S.B. Shirey, D. G. Pearson, T. Stachel, F. Nestola, T. Moses.

ISSN 1529-6466 (print) ISSN 1943-2666 (online) ISBN 978-1-946850-10-2

Mary B. Ansari Best Reference Award from the Geoscience Information Society in 2023.

1. *Origin and evolution of continental mantle lithosphere and its resource endowment*
Special volume in Lithos. Elsevier, March 2021.
<https://doi.org/10.1016/j.lithos.2021.105965>

Edited by J.M. González-Jiménez, S. Aulbach, **K.V. Smit**, S. Timmerman, A. Giuliani, S.K. Mondal.

DIAMONDS FROM THE DEEP

<https://www.thepointtwoogram.com/diamonds-from-the-deep>

A column feature for *Gems and Gemology*, highlighting the latest diamond geology research and explaining it to a lay audience.

Karen V. Smit and Steven B. Shirey (2021). *Diamonds from the deep: Windows into scientific research*.
6. *What have diamond ages taught us?* *Gems and Gemology*, 2021

Karen V. Smit and Steven B. Shirey (2020). *Diamonds from the deep: Windows into scientific research*.
5. *Diamonds are not Forever! Diamond Dissolution*. *Gems and Gemology*, 56, 1, 148–155.

Karen V. Smit and Steven B. Shirey (2019). *Diamonds from the deep: Windows into scientific research*.
4. *Kimberlites: Earth's Diamond Delivery System* *Gems and Gemology*, 55, 2, 286–292.

Karen V. Smit and Steven B. Shirey (2019). *Diamonds from the deep: Windows into scientific research*.
3. *How old are diamonds? Are they forever?* *Gems and Gemology*, 55, 1, 102–109.

Karen V. Smit and Steven B. Shirey (2018). *Diamonds from the deep: Windows into scientific research*.
2. *How do diamonds form in the deep Earth?* *Gems and Gemology*, 54, 4, 440–445.

Karen V. Smit and Steven B. Shirey (2018). *Diamonds from the deep: Windows into scientific research*.
1. *Diamonds help solve the enigma of Earth's deep water*. *Gems and Gemology*, 54, 2, 220–223.

OTHER PUBLICATIONS

- Karen V. Smit.** *Summary of: Sulfur isotopes in diamonds reveal differences in continent construction*, GSSA Geobulletin, 62, 3, 27-33, September 2019.
- Russell Shor and **Karen V. Smit.** *Russia's Lomonosov Diamond Projects Shows its (Fancy) Colors*. GIA website, November 2016.
- Wuyi Wang and **Karen V. Smit.** *Very Large Type Ib Natural Diamond*. Lab Note in Gems and Gemology, Winter 2015, 51, 4.
- Karen V. Smit.** *Report on the GEM workshop, 21/22 February 2013, Vancouver, Canada*. GSSA Geobulletin, 56, 3, 21.

RESEARCH SUPERVISION and EXAMINATION

Research Associate / Postdoctoral Fellowships at the University of the Witwatersrand

- Anton Kuttyrev –2025 onwards (co-supervision with Ben Hayes).
Research topic: Origin and distribution of chromitites in the Bushveld Igneous Complex.
- Khulekani Khumalo –2024 onwards (co-supervision with Grant Bybee and Saumik Samanta).
Research topic: Novel isotopic technique development in the Wits Isotope Geology laboratories, and application to the study of large igneous provinces in southern Africa.

PhD at the University of the Witwatersrand

- Patience Ratshalingwa –2024 onwards (co-supervision with Linda Iaccheri).
Research topic: Evolution of the Archaean crust in the Witwatersrand block of the Kaapvaal craton.

MSc at the University of the Witwatersrand

- Kaydi Govender –2024 onwards (co-supervision with Grant Bybee, Trishya Owen-Smith, Lorenzo Milani (UP), Peng Ni (UCLA)).
Research topic: Constraining the magma sources and tectonic setting of the Kunene AMCG complex.
- Fezeka Dliwako –2024 onwards (co-supervision with Linda Iaccheri).
Research topic: Age and evolution of the Witwatersrand block of the Kaapvaal craton: mantle and crustal perspectives.
- Kananelo Letete –2023 onwards.
Research topic: Origin and evolution of the lithospheric mantle below Dokolwayo, Ancient Gneiss Complex.

MSc Economic Geology by coursework at the University of the Witwatersrand

- Lineo Ntsalong –2024 onwards.
Research topic: Composition of the lithospheric mantle below Kao diamond mine, Lesotho.

BSc (Honours) at the University of the Witwatersrand

Sinethemba Mathebula –2024 (co-supervision with Linda Iaccheri).

Research topic: Mapping and geochemical analyses of TTG gneisses in the Johannesburg Dome
Asakhe Banya –2024 (co-supervision with Grant Bybee).

Research topic: Geochemistry of anorthosites from the Qaqortorsuaq Anorthosite Mine in Greenland.

Nomonde Miya –2024 (co-supervision with Scott MacLennan).

Research topic: Geochemistry of key regional lithologies from the Qaqortorsuaq Anorthosite Mine in Greenland.

Fezeka Dliwako –2023 (co-supervision with Grant Bybee).

Research topic: Composition of the TTG gneisses of the Nooitgedacht Platform (Johannesburg Dome).

Kaydi Govender –2023.

Research topic: Composition of the peridotitic lithosphere at Roberts Victor.

Tendani Moepcoe –2022.

Research topic: Evolution of the mantle below Dokolwayo (Eswatini).

Internal Examiner at the University of the Witwatersrand

Samuel Chimombe. November 2022.

Degree: MSc by coursework, Economic Geology.

Advisor: Paul Nex.

Thesis Title: An Investigation into the Potential for Underground Mining of the Murowa K2-Kimberlite Pipe.

External Examiner

Michael Gress. November 2020.

Degree and University: PhD, Vrije Universiteit, Amsterdam.

Advisor: Gareth Davies.

Thesis Title: Dating individual diamond growth zones: A first step towards quantifying the temporal evolution of the mantle carbon cycle.

Co-supervision of Research Internships at the Gemological Institute of America (along with Ulrika D’Haenens-Johansson).

Athena (Si) Chen. July – August 2019.

Research topic: Spectroscopic characteristics of agate.

Home University: PhD Penn State, State College, Pennsylvania, USA (with Peter Heaney).

Michael Gress. February-April 2019.

Research topic: Spectroscopic characteristics of natural diamonds from Botswana

Home University: PhD Vrije Universiteit, Amsterdam (with Gareth Davies).

Lewis Mills. July-August 2018.

Research topic: Cathodoluminescence spectroscopy to determine boron concentration and distribution in CVD diamonds.

Home University: PhD Warwick, UK (with Mark Newton).

Michelle Wenz. June – August 2018.

Research topic: Photoluminescence characteristics of lithospheric and sub-lithospheric inclusion-bearing diamonds.

Home University: PhD Northwestern University, Chicago, USA (with Steve Jacobsen).

Phil Diggle. August 2017.

Research topic: Cathodoluminescence spectroscopy to determine boron concentration and spatial distribution in HPHT diamonds.

Home University: PhD Warwick (with Mark Newton).

INVITED SEMINARS

Invited speaker to a range of international research institutions and collaborative research partners. Topics include carbon in the mantle, diamond genesis, continent formation and deep Earth processes.

25th Symposium of the Federation for European Education In Gemmology, Brussels, Belgium. October 2024.

Host: *Guy Lalous*

Topic: *Diamond ages: are diamonds forever?*

University of Pretoria Exxaro Diamond Workshop, South Africa. October 2024.

Host: *Lorenzo Milani*

Topics: 1) *Diamond defects and classification*
2) *Factors affecting diamond value*
3) *Diamond geochronology*

University of Oxford, UK. May 2023.

Host: *Richard Palin*

Topic: *Plume-related diamond formation at Voorspoed in the central Kaapvaal craton.*

University of Kentucky, Lexington Kentucky, USA. February 2023.

Host: *Dave Moecher*

Topic: *Geological processes affecting diamond colour.*

Geological Society of South Africa, Bushveld Branch, Rustenburg, South Africa. June 2022.

Host: *Rais Latypov*

Topic: *Pink diamonds and continental collision.*

University of the Witwatersrand, Johannesburg, South Africa. April 2022.

Host: *Grant Bybee*

Topic: *Plume-related diamond formation at Voorspoed in the central Kaapvaal craton.*

Watch here: <https://www.youtube.com/watch?v=u-r3o0vLPpY>

University of Alberta, Edmonton, Canada. January 2022.

Host: *Thomas Stachel*

Topic: *Geochronology of diamonds, and what diamond ages have taught us.*

Geological Society of South Africa. August 2021.

Host: *Craig Smith*

Topic: *Diamonds from the central Kaapvaal craton document 2 billion years of lithosphere modification.*

Watch here: <https://www.youtube.com/watch?v=xkWw2fqs3nc>

Geological Society of South Africa. June 2021.

Host: Craig Smith

Topic: *Preservation of Archaean cratonic mantle below NW Russia, through Proterozoic rifting and collision?*

Watch here: https://www.youtube.com/watch?v=N_oS7FQQZ3M

De Beers Exploration - South Africa and Canada. June 2021.

Host: Ingrid Chinn

Topic: *Diamonds from the central Kaapvaal craton document 2 billion years of lithosphere modification.*

De Beers Exploration - South Africa and Canada. April 2021.

Host: Ingrid Chinn

Topic: *Fancy colour natural and lab-grown diamonds.*

University College Cork, Cork, Ireland. November 2020.

Host: Aoife Gleeson

Topic: *What can diamonds tell us about the deep Earth, and the origin of continents?*

Zhejiang University, China. November 2020.

Host: Johnny Zhang Zhou

Topic: *Sulfur isotopes in diamonds reveal differences in continent construction*

Watch here:

https://www.youtube.com/watch?v=Q13Zx5NQ-kk&ab_channel=ZJU_Earth_Data

Dalhousie University, Halifax, Canada. September 2020.

Host: Yana Fedortchouk

Topic: *What natural diamonds can tell us about how continents are formed.*

Goethe University, Frankfurt, Germany. June 2020.

Host: Sonja Aulbach

Topic: *What natural diamonds can tell us about how continents are formed.*

Watch here:

<https://www.thepointtwogram.com/watch-seminars?wix-vod-video-id=e05bd901366d4ee3b1bee963f9ce787b&wix-vod-comp-id=comp-ka71rfop>

University of Alberta, Edmonton, Canada. February 2020.

Host: Thomas Stachel

Topic: *What natural diamonds can tell us about how continents are formed.*

Department of Mineral Sciences, National Museum of Natural History, DC, USA. April 2019.

Topic: Tim McCoy

Topic: *How do diamonds form in the cratonic lithosphere?*

University of Cape Town, South Africa. May 2017.

Host: Steve Richardson

Topic: *Formation and evolution of the Palaeoarchaeon western Superior lithosphere: evidence from peridotite and diamond ages.*

Geotop, University of Quebec in Montreal, Canada. March 2017.

Host: Hanika Rizo

Topic: *Formation and evolution of the Palaeoarchaeon western Superior lithosphere: evidence from peridotite and diamond ages.*

Lafayette College, Easton, PA, USA. September 2016.

Host: Tamara Carley

Topic: *1st year Mineralogy guest lecture - Mineral and fluid inclusions in diamonds: Tools to investigate the deep Earth.*

Queens College, New York City, USA. October 2015.

Host: Marc-Antoine Longpré

Topic: *Mineral and fluid inclusions in diamonds: tools to investigate the deep Earth.*

Lamont-Doherty Earth Observatory, Palisades, NY, USA. September 2015.

Host: Yakov Weiss

Topic: *Origin and evolution of the lithospheric mantle below the western Superior craton.*

Lafayette College, Easton, PA, USA. September 2015.

Host: Tamara Carley

Topic: *Temporal evolution of the Superior lithospheric mantle: evidence from peridotite and diamond ages.*

Lafayette College, Easton, PA, USA. September 2015.

Host: Tamara Carley

Topic: *1st year Mineralogy guest lecture - Mineral and fluid inclusions in diamonds: Tools to investigate the deep Earth.*

Geophysical Laboratory, Washington DC, USA. February 2015.

Host: Anat Shahar

Topic: *Temporal evolution of the Superior lithospheric mantle: evidence from peridotite and diamond ages.*

University of Maryland, College Park, USA. October 2014.

Host: Jabrane Labidi

Topic: *Age, origin and composition of the Attawapiskat lithospheric mantle and its diamonds (Superior craton, Canada).*

Vrije Universiteit, Amsterdam, The Netherlands. January 2013.

Host: Gareth Davies

Topic: *Re-Os isotopic analyses of mantle xenoliths and diamonds: Case studies from Australia and Canada.*

De Beers Canada Exploration, Toronto, Canada. June 2011.

Host: Stephan Kurszlauskis

Topic: *The composition of the SCLM below the Victor kimberlite, Superior craton.*

SERVICE TO THE RESEARCH COMMUNITY

Committees

- 2023 – present** **Earth and Planetary Science Letters – Advisory Board Member**
- 2022 – present** **Scientific Committee for the International Diamond School (Bressanone, Italy)**
- 2019 – 2023** **Marketing Committee for IKC (Yellowknife, Canada – August 2021)**

Co-manage International Kimberlite Conference (IKC) Social Media profiles on LinkedIn, Facebook and Instagram.

- 2017 – present** **International Kimberlite Conferences Advisory Committee**

This committee consists of the most respected, internationally recognized academic and industrial scientists whose research concerns the origin of diamonds, evaluation of diamond deposits, and the character of diamond-bearing rocks and the upper mantle. The function of the IKCAC is to recommend, and choose, suitable locations for IKCs, as well as to provide guidance and assistance to the local organizers of IKCs.

www.12IKC.ca

Other members (in alphabetical order): Sonja Aulbach, Gerhard Brey, Andrew Macdonald, Tom Nowicki, Graham Pearson, Roberta Rudnick, Stephen Haggerty, Roger Mitchell, Hugh O'Brien, Sue O'Reilly, Dave Phillips, Barbara Scott-Smith, Craig Smith, Stuart Smith, Nikolay Sobolev, Thomas Stachel, Victor Ustinov

- 2015 – 2019** **Affiliated researcher of the 'Diamonds and Mantle Geodynamics of Carbon' consortium (DMGC)**

The DMGC is part of the larger Deep Carbon Observatory (DCO) funded by the Sloan Foundation to support research on the Deep Carbon cycle (2009-2019).

<https://deepcarboncycle.org/>

Other members (in alphabetical order): Sonja Aulbach, Frank Brenker, Helene Bureau, Pierre Cartigny, Daniel Frost, Erik Hauri, Dorrit Jacob, Oded Navon, Fabrizio Nestola, Paolo Nimis, Graham Pearson, Steve Shirey, Thomas Stachel, Emilie Thomassot, Mike Walter

Conferences and workshops

Short course organiser

Diamond: Genesis, Mineralogy and Geochemistry - 'Mineralogical Society of America' 2-day Virtual Short Course

<http://www.minsocam.org/msa/SC/Diamond.html>

Session Convener

Diamond session, 12th International Kimberlite Conference, Yellowknife, Canada. July 2024.

03i - Origin and Evolution of Continental Mantle Lithosphere and its Resource Endowment" at Goldschmidt, Barcelona, Spain. August 2019.

Session Moderator

Sessions at the International Diamond School, Bressanone, Italy. January 2018, February 2023.

Morning session on the Geology and Gemmology of Diamond, 11th International Kimberlite Conference, Gaborone, Botswana. September 2017.

Morning session at 3rd Annual Deep Carbon Observatory Science Meeting. St. Andrews, Scotland. March 2017.

Judge

Student oral presentations at the 11th International Kimberlite Conference, Gaborone, Botswana. September 2017.

Peer Review

Grant proposal review

Canada - Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant 2021 (×1)

USA - National Science Foundation proposal (NSF EAR-Petrology and Geochemistry division 2016) (×1),

UK - Natural Environment Research Council (NERC) Discovery Science Standard Grant 2019 (×1)

Europe – European Research Council (ERC) Consolidator Grant 2024 (×1)

Solicited peer-reviewer for several international geology journals

Science, Nature Communications, Scientific Reports, Geology, Geochimica et Cosmochimica Acta, Chemical Geology, Lithos, Economic Geology, Journal of Petrology, Minerals Contributions to Mineralogy and Petrology, American Mineralogist, Mineralogy and Petrology, European Journal of Mineralogy, Australian Journal of Earth Science, Journal of the Geological Society of India, Physics and Chemistry of Minerals, Gems and Gemology

PUBLIC SEMINARS / WORKSHOPS

Diamond Geochronology

Seminar as part of the 'Mineralogical Society of America' 2-day short course on 'Diamonds' – 27 October 2022.

<http://www.minsocam.org/msa/SC/Diamond.html>

Where Do Yellow Type Ib Diamonds Form in Nature?

Public seminar as part of the 'GIA Knowledge Sessions' series. Zoom webinar – 10 December 2020.

<https://www.gia.edu/knowledge-sessions-webinar>

Watch here: <https://www.youtube.com/watch?v=OdAT0DW97Y0>

A Comparison of Diamonds and Colored Stones

Public seminar as part of the 'GIA Knowledge Sessions' series. Zoom webinar – 10 September 2020.

<https://www.gia.edu/knowledge-sessions-webinar>

Watch here: <https://www.youtube.com/watch?v=23ZBrNmo-Jo>

Diamond ages: Are diamonds forever?

Public seminar as part of the 'GIA Knowledge Sessions' series. Zoom webinar – 30 July 2020.

<https://www.gia.edu/knowledge-sessions-webinar>

Watch here: <https://www.youtube.com/watch?v=YSDksrpvA9A>

What natural diamonds can tell us about how continents are formed

Public seminar as part of the 'GIA Science Talks' series. New York City – 19 February 2020.

<https://www.gia.edu/science-talks>

GIA Science Talks

Founder and organizer of a new talks series on GIA research, aimed at professionals in the gem and jewelry industry and the public.

October 2019 until Covid hit

<https://www.gia.edu/science-talks>

Research and Cocktails: Diamond Origin. Matthew Tratner and Karen Smit.

Presentation on GIA's newly launched Diamond newly launched "Diamond Origin Report" - a service that matches polished diamonds to their previously submitted rough.

Washington DC - Zoom December 2020.

Toronto - 29 October 2019.

New York City - 27 July 2019, 20 November 2019.

<https://www.gia.edu/diamond-origin-report-service>

Watch here: <https://www.thepointtwogram.com/watch-seminars?wix-vod-video-id=0555006e4de14fdd9dbcd5bad6508d15&wix-vod-comp-id=comp-ka71rfop>

The Lesedi and Constellation diamonds — part of the same huge >2744 ct rough

Presentation in the GIA Booth at JCK Las Vegas. June 2019.

<https://www.gia.edu/gem-event-jck-las-vegas-2019>

More than a flaw: Using inclusions to investigate the deep Earth and distinguish natural from lab-grown diamonds.

Seminar for gemology teachers and students. GIA Education, New York City - 11 February 2019.

Seminar at "International Jewellery London" - a trade show for members of the jewellery, gift and fashion trade. London, UK. 2 September 2018.

<http://www.jewellerylondon.com/en/Sessions/64389/More-than-a-flaw-Using-inclusions-to-investigate-the-deep-Earth-and-distinguish-natural-from-lab-grown-diamonds>

GIA Advanced Synthetic Diamond Seminars. Karen Smit, Ulrika D’Haenens-Johansson, Wuyi Wang, Mike Breeding.

In the GIA Advanced Synthetic Diamond Seminar, participants will gain in-depth knowledge of advanced diamond identification techniques, including hands-on experience with current production synthetic diamonds and the latest detection technology. The seminars are a combination of lecture and lab that leverages the expertise of GIA research scientists and the education skills and experience of GIA instructors.

Two-day seminars, New York City, USA. 24-25 June 2019, 6-7 April 2020.

Two-day seminars, London, UK. 29-30 August 2018, 3-4 September 2018.

2 one-day seminars, Dubai, UAE. 17 and 18 March 2019.

<https://www.gia.edu/advanced-synthetic-diamond-seminar>

Gem Diamonds: Treatment, Synthetics and It’s Identification. James Shigley, Wuyi Wang, Karen Smit, Mike Breeding, Ulrika D’Haenens-Johansson.

GIA short course at the general meeting of the International Mineralogical Association. Johannesburg, South Africa. September 2014.

Smithsonian's Science Education Academies for Teachers Workshop. Steven Shirey, Timothy Mock, Marion Garcon and Karen Smit.

This was a professional development workshop for teachers around the US, organized by the Smithsonian. I was part of the group that hosted the workshop at the geochemistry laboratories at the Department of Terrestrial Magnetism. Washington DC, USA. August 2014.

PANEL DISCUSSIONS

Diamonds are Forever: Sustainability and the World's Favorite Gem. Philippa Durell, Olivia Pinnock, Laura Chavez, Karen Smit.

The rise in the manufacture of lab grown diamonds and ever evolving techniques for their creation is beginning to impact the traditional diamond sector. Moderated by Nina Sophia-Miralles, Editor of Londonr Magazine at the Goldsmiths' Centre, a panel of leading experts will discuss the current state of the diamond industry and the differences between mined and lab grown diamonds. They will explore how our cultural opinion of diamonds is shifting as a result of these changes and what needs to be done to ensure a sustainable future for the industry.

Panel discussion, Goldsmiths' Centre. London UK. 28 February 2019.

<https://www.goldsmiths-centre.org/whats-on/whats-on-creative-links-diamonds-are-forever-sustainability-and-worlds-favourite-gem/>

The Ethics of Jewelry. Monique Pean, Patricia Syvrud, Karen Smit and Benjamin Smithee.

The exhibition brings together over two hundred objects across time and culture to explore how jewellery acts upon and activates the body it adorns. Using the content of the show as a spring board, the conversation will explore timely issues facing the world of jewellery today, focusing on topics including ethically sourced and sustainable materials, lab made and synthetic gems, and the evolving perceptions of material and value due to current technologies.

Panel discussion, Met Museum. New York City, USA. 25 January 2019.

<https://www.metmuseum.org/events/programs/met-speaks/free-lectures/the-ethics-of-jewelry>

Mineral Panel: From the Earth to Your Fingertips. Karen Smit, Carl Barney, Dylan Stoloritz, Howard Heitner and Cap Beesley.

How minerals form, how they are mined and processed, and their many uses, from industrial applications to fine jewelry.

Panel discussion with audience participation, Bruce Museum, Greenwich, Connecticut, USA. December 2017.

<https://brucemuseum.org/calendar/event/mineral-panel-from-the-earth-to-your-fingertips>

MEDIA

Radio interview. "The Money Show with Bruce Whitfield". Cape Talk. South Africa. 05 March 2024.

Radio interview. "The Money Show with Bruce Whitfield". Cape Talk. South Africa. 20 October 2023.
<https://www.capetalk.co.za/podcasts/133/the-money-show/751150/two-top-ceos-of-consumer-goods-companies-in-sa-step-down-in-a-month-is-the-private-sector-having-a-leadership-crisis>

TV Interview. Featured in "Diamonds" episode of "Explained" on Netflix. November 2019.

See the trailer at: <https://twitter.com/voxdotcom/status/1200596821174706176?lang=en>

Radio interview. Featured in “Hidden Gems with Maya”, Women’s Radio Station, UK. November 2018.

<https://thecaratsoup.com/2018/11/01/hidden-gems-with-maya-on-womens-radio-station-farah-rahman-dietor-farah-and-bow-and-karen-smit-research-scientist-gia/>

<https://soundcloud.com/womensradiostation/hidden-gems-farah-rahman>

Research featured in:

Diamond District Monthly. June 2019.

http://diamonddistrict.org/wp-content/uploads/2019/05/DDM_Newsletter_Vol-107_June_2019_Final_Single-Pages_High-Res.pdf

Live Science. April 2019.

<https://www.livescience.com/65327-diamond-flaws-reveal-early-geology.html>

Rapaport Diamond News. April 2019.

<https://www.diamonds.net/News/NewsItem.aspx?ArticleID=63635&ArticleTitle=GIA+Research+Reveals+Clues+to+Continent+Formation>

Comments quoted in:

National Geographic. May 2019.

<https://www.nationalgeographic.com/science/2019/05/diamond-time-capsule-ancient-oceans/>

PBS Nova. August 2019.

<https://www.pbs.org/wgbh/nova/article/super-deep-diamonds-helium/>

UNIVERSITY TEACHING EXPERIENCE

University of the Witwatersrand, South Africa

2024–onwards: 2nd year course on Introduction to Mineralogy

University of Alberta, Canada

2011–2012: Teaching Assistant for 4th year course on the Petrogenesis of Cratons, Kimberlites and Diamonds

2010–2011: Teaching Assistant for 1st year introductory course in Geology

University of Stellenbosch, South Africa

2005: Teaching Assistant for 3rd year Sedimentary Geology

2004: Teaching Assistant for 1st year Inorganic Chemistry Laboratory Practicals

STUDENT UNIVERSITY AWARDS

University of Alberta, Canada

Patricia Anne Cavell Graduate Scholarship 2012 (\$1000)
GL Cumming Memorial Graduate Scholarship 2012 (\$2100)
Christopher Scarfe Memorial Graduate Scholarship 2011 (\$1600)
Bruce Nesbitt Memorial Graduate Award 2010 (\$900)

University of Cape Town, South Africa

REI (Research, Education, Investment) Grant (2008)

R10 000 (\$1400) awarded by the Geological Society of South Africa for travel to the 9th International Kimberlite Conference, Frankfurt, Germany.

National Research Foundation Bursary (2007-2008)

Awarded to researchers (Prof Anton le Roex) who are funded through the NRF system (South Africa) for allocation to MSc students.

University of Stellenbosch, South Africa

National Research Foundation Bursary (2005)

Awarded to researchers who are funded through the NRF system (South Africa) for allocation to BSc (Honours) students

Stellenbosch Merit Bursary (2001)

R6000 (\$820) First-year bursary based on final Matriculation examinations, for an aggregate between 85-89%

CONFERENCE PRESENTATIONS

Frequent presenter at international research conferences and trade events, speaking on craton formation and evolution, the origin of natural diamonds, and their spectroscopic features.

Keynote and invited presentations

S. Timmerman*, Q. Zhang, T. Stachel, **K.V. Smit**, J.W. Harris, S.B. Shirey, D.G. Pearson. *Sublithospheric diamond ages and their geodynamic implications*. Invited keynote presentation. 12th International Kimberlite Conference, Yellowknife, Canada. July 2024.

K.V. Smit*. *Geochronology of Diamond*. Invited keynote presentation. International Diamond School 2023, Bressanone, Italy. February 2023.

K.V. Smit* M.U. Gress, G.R. Davies, I.L. Chinn, S.B. Shirey. *Plume-related diamond formation at Voorspoed in the central Kaapvaal craton*. Invited oral presentation. GAC/MAC 2022, Halifax, Nova Scotia. May 2022.

D.G. Pearson*, A.J. Schaeffer, T. Stachel, B.A. Kjarsgaard, H. Grutter, J. Scott, J. Liu, T. Chacko, **K.V. Smit**. *Revisiting the craton concept and its relevance for diamond exploration*. Invited oral presentation. GAC/MAC 2021, London, Ontario. November 2021.

K.V. Smit*. *Geological processes affecting diamond colour*. One of eight invited keynote presentations at the 71st Diamond Conference, University of Warwick, UK. July 2021.

Karen V. Smit

- K.V. Smit***. *Fancy-coloured natural and lab-grown diamonds and their treated counterparts*. One of three invited presentations on the latest developments in diamond research. Virtual PDAC 2021 Convention, March 2021.
<https://www.pdac.ca/convention/programming/technical-program/sessions/technical-program/recent-developments-in-diamond-research>
- K.V. Smit***, D.G. Pearson, M.Y. Krebs and S. Woodland. *Trace elements of rare CH₄-bearing fluids in Zimbabwe diamonds*. Invited presentation. Virtual Goldschmidt, June 2020.
- S.B. Shirey* and **K.V. Smit**. *Age and depth of oceanic slab-derived diamonds and the formation of Archean subcontinental mantle*. Keynote presentation. Virtual Goldschmidt, June 2020.
- K.V. Smit***, S.B. Shirey, E.H. Hauri and R.A. Stern. *Inclusions in diamonds reveal differences in how continents are made*. One of 10 early career researchers invited to present “lightning talks” at Deep Carbon 2019: a showcase of the most exciting results to come out of the 10-year Deep Carbon Observatory collaboration. Washington DC, USA. October 2019.
<https://deepcarbon.net/deep-carbon-2019>
https://www.youtube.com/watch?v=S_PoXWTh1II
- K.V. Smit***, E.H. Hauri, S.B. Shirey and J. Wang. *Archaean sulphur in Neoproterozoic Zimmi diamonds (West Africa)*. Invited oral presentation at Goldschmidt, Boston, USA. August 2018.
- K.V. Smit***, L. C. Loudin, W. Wang, R. A. Stern, A. Steele and S. B. Shirey. *Using Raman imaging and PL mapping to understand Zimbabwe diamond growth*. Invited oral presentation at Witec Instruments Raman Workshop, Washington DC, USA. December 2017.
<http://witec-instruments.com/resources-and-education/workshops/workshop-carnegie2017/>
- K.V. Smit***, D.G. Pearson, T. Stachel and M. Seller. *Temporal Evolution of the Lithosphere-Asthenosphere Boundary and its Effect on the “Diamond- Window” in the Western Superior Craton*. Invited oral presentation at the Joint Assembly of AGU-GAC-MAC-CGU, Montreal, Canada. May 2015.

Other presentations

2025

- K.O. Govender*, G.M. Bybee, T. Owen-Smith, **K.V. Smit**, and L. Milani. *Constraining the magma sources and tectonic setting of the Kunene AMCG Complex*. Presentation at Igneous Metamorphic Studies Group. Stellenbosch, South Africa. January 2025.

2024

- K. Letete*, **K.V. Smit**, S. Burness. *Origin of the lithospheric mantle below the Ancient Gneiss Complex*. Oral presentation at CIMERA Annual Research Symposium. Johannesburg, South Africa. November 2024.
- K.O. Govender*, G.M. Bybee, T. Owen-Smith, **K.V. Smit**, and L. Milani. *Constraining the magma sources and tectonic setting of the Kunene AMCG Complex*. Poster presentation at CIMERA Annual Research Symposium. Johannesburg, South Africa. November 2024.

Karen V. Smit

F. Dliwako, **K.V. Smit**, L. Iaccheri. *Tectonic processes affecting the central Kaapvaal craton*. Poster presentation at CIMERA Annual Research Symposium. Johannesburg, South Africa. November 2024.

B. Hayes*, B. Khoza, R. Maghdour-Mashhour, **K.V. Smit**, L.D. Ashwal, A.J.B. Smith, J. Vermeulen. *Multi-geochemical and Sr-Nd isotope evidence of lateral magma flow from a feeder zone northeast of Impala Bafokeng, Western Limb, Bushveld Complex*. 100 years of the Merensky Reef - Minerals Metals and Mining Conference. Rustenberg, South Africa. August 2024.

K. Letete*, **K.V. Smit**, S. Burness. *Age and origin of the lithospheric mantle below the Ancient Gneiss Complex*. Poster presentation at 12th International Kimberlite Conference. Yellowknife, Canada. July 2024. 12IKC-135.

K.V. Smit, K.O. Govender, K. Letete, F. Dliwako. *Transitional pyroxenitic-lherzolitic xenoliths from Roberts Victor, Kaapvaal craton*. Poster presentation at 12th International Kimberlite Conference. Yellowknife, Canada. July 2024. 12IKC-143.

S.B. Shirey*, **K.V. Smit**, D.G. Pearson, M.J. Walter, T. Stachel, L.S. Wagner, P.E. van Keken. *Temporal changes in diamond formation by subduction through Earth history: thermal modeling, seismology, & petrology evidence*. Poster presentation at 12th International Kimberlite Conference. Yellowknife, Canada. July 2024. 12IKC-179.

2023

K. Letete*, **K.V. Smit**, S. Burness. *Age and origin of the lithospheric mantle below the Ancient Gneiss Complex*. Poster presentation at CIMERA Annual Research Symposium. Johannesburg, South Africa November 2023.

K.V. Smit*. *Formation processes of lithospheric and sublithospheric diamonds*. Oral presentation at CIMERA Early and Deep Earth Metallogensis and Processes. Johannesburg, South Africa November 2023.

K.V. Smit*. *Geological processes affecting diamond colour*. Oral presentation at Kimberley International Diamond Symposium. Kimberley, South Africa, August 2023.

K. Letete*, **K.V. Smit**, S. Burness. *Age and origin of the lithospheric mantle below the Ancient Gneiss Complex*. Poster presentation at Kimberley International Diamond Symposium. Kimberley, South Africa, August 2023.

2020

C.V. Peaker*, **K.V. Smit**, J. P. Goss, P.R. Briddon, M.J. Rayson and W. Wang. *Transition metals in Australian gray-blue-violet diamonds*. Virtual Goldschmidt, June 2020.

2019

K.V. Smit*, T. Stachel, R.W. Luth and R.A. Stern. *How do diamonds form in eclogites?* Oral presentation at the 13th GIA Research Meeting, Carlsbad, California. November 2019.

M.E. Regier*, T.B. Chalk, R.A. Stern, **K.V. Smit**, E.M. Smith, T. Stachel, G.L. Foster, Y. Bussweiler, J.W. Harris and D.G. Pearson. *Isotopic Evidence for the Coupled Recycling of Carbon and Boron to Lower Mantle Depths*. Oral presentation at Goldschmidt, Barcelona, Spain. August 2019.

K.V. Smit*, D.G. Pearson, E. Shchukina and S. Woodland. *Preservation of Archaean cratonic mantle below Grib, through Proterozoic rifting and collision*. Oral presentation at Goldschmidt, Barcelona, Spain. August 2019.

M.E. Regier*, T.B. Chalk, R.A. Stern, **K.V. Smit**, E.M. Smith, T. Stachel, G.L. Foster, Y. Bussweiler, C. Debuhr, J.W. Harris and D.G. Pearson. *Subduction signatures in lower mantle, boron-bearing blue diamond*. Oral Presentation at the 70th Diamond Conference, University of Warwick, UK. July 2019. O19

M.U. Gress*, **K.V. Smit**, I.L. Chinn, W. Wang, J.M. Koornneef and G.R. Davies. Spectroscopic characteristics of Botswanan diamonds and their potential relationship with age. Poster Presentation at the 70th Diamond Conference, University of Warwick, UK. July 2019. P15

2018

K.V. Smit*, E.H. Hauri, S.B. Shirey and J. Wang. *Sulfur isotopes of sulfide inclusions in diamonds: a tool to unravel craton geodynamics*. Oral presentation at the AGU Fall Meeting, Washington, DC, USA. December 2018.

K.V. Smit*, E. Myagkaya, S. Persaud and W. Wang. *Naturally irradiated black diamonds from Marange (Zimbabwe)*. Oral presentation at the GSA conference, Indianapolis, Indiana. November 2018.

K.V. Smit*, U.F.S. D'Haenens-Johansson, D. Howell, L. Loudin and W. Wang. *Origin of rare Fancy Yellow diamonds from Zimmi (West Africa)*. Poster presentation at the GIA Symposium, Carlsbad, California. October 2018.

U.F.S. D'Haenens-Johansson*, S. Mandal, T-H. Tsai, M. Toosi, B. Ergi, **K.V. Smit** and J. Zeng. *Development of a laser Raman and photoluminescence system for diamond identification*. Oral presentation at the 12th GIA Research Meeting, Carlsbad, California. October 2018.

E. Barrie*, **K.V. Smit** and W. Wang. *Naturally irradiated green diamonds from Guyana*. Oral presentation at the 12th GIA Research Meeting, Carlsbad, California. October 2018.

E.M. Smith* and **K.V. Smit**. *Carbonatitic melt inclusions with CO₂ and CH₄ in healed cracks in a diamond*. Oral presentation at the 12th GIA Research Meeting, Carlsbad, California. October 2018.

K.V. Smit*, E.H. Hauri, S.B. Shirey and J. Wang. *Archaean sulphur in Neoproterozoic Zimmi diamonds (West Africa)*. Oral presentation at the 12th GIA Research Meeting, Carlsbad, California. October 2018.

K.V. Smit*, E. Myagkaya, S. Persaud and W. Wang. *Naturally irradiated black diamonds from Marange (Zimbabwe)*. Oral presentation at the 12th GIA Research Meeting, Carlsbad, California. October 2018.

K.V. Smit*, U.F.S. D'Haenens-Johansson, D. Howell, L.C. Loudin and W. Wang. *Deformation-related spectroscopic features in natural Type Ib diamonds from Zimmi (West African craton)*. Oral presentation at the International Diamond School, Bressanone, Italy. January 2018.

2017

Karen V. Smit

- G.H. Harper*, T. Blackburn and **K.V. Smit**. *Timescales of Crustal Cooling of the Superior Craton near Attawapiskat, Ontario, Canada, and Implications for Extent of Keweenaw Plume Heating*. Poster Presentation at the AGU Fall Meeting, New Orleans, USA. December 2017.
- K.V. Smit***, U.F.S. D’Haenens-Johansson, D. Howell, L.C. Loudin and W. Wang. *Deformation-related spectroscopic features in natural Type Ib diamonds from Zimmi (West African craton)*. Oral presentation at the 11th GIA Research Meeting, Carlsbad, California. November 2017.
- U.F.S. D’Haenens-Johansson*, E.M. Smith, **K.V. Smit**, W. Wang and T. Moses. *The 812-Carat Pure Type IaB Constellation Diamond from Karowe – Part of an Even Larger Rough?* Poster Presentation at the 11th International Kimberlite Conference, Gaborone, Botswana. September 2017. 11IKC-4611
- T. Stachel*, A. Banas, S. Aulbach, **K.V. Smit**, P. Wescott, I. Chinn, D. Fisher and J. Kong. *The Victor Diamond Mine (Superior Craton, Canada) - A new paradigm for exploration in unconventional settings*. Oral Presentation at the 11th International Kimberlite Conference, Gaborone, Botswana. September 2017. 11IKC-4453
- K.V. Smit***, S.B. Shirey, E.H. Hauri, J. Wang, T. Stachel and R.A. Stern. *Zimmi diamond formation through infiltration of recycled methane into sulphide-bearing eclogite*. Oral Presentation at the 11th International Kimberlite Conference, Gaborone, Botswana. September 2017. 11IKC-4560
- D. Howell*, Y. Weiss, **K.V. Smit**, L. Loudin and F. Nestola. *DiaMap: New applications for processing IR spectra of fluid-rich diamonds and mapping diamonds containing isolated nitrogen (Type Ib) and boron (Type IIb)*. Poster Presentation at the 11th International Kimberlite Conference, Gaborone, Botswana. September 2017. 11IKC-4457
- A. Banas*, T. Stachel, **K.V. Smit** and K. Armstrong. *Yellow and white diamonds from Qilalugaq kimberlites: Two generations of diamond growth*. Poster Presentation at 11th International Kimberlite Conference, Gaborone, Botswana. September 2017. 11IKC-4536
- U.F.S. D’Haenens-Johansson*, E.M. Smith, **K.V. Smit**, W. Wang and T. Moses. *The 812-Carat Pure Type IaB Constellation Diamond from Karowe – Part of an Even Larger Rough?* Oral Presentation at the 68th Diamond Conference, University of Warwick, UK. July 2017. O12
- K.V. Smit***, S.B. Shirey, D. Howell, L. Loudin and W. Wang. *Origin of Type Ib diamonds in the West African lithosphere: Age and defect characteristics of Zimmi sulphide-bearing diamonds*. Oral Presentation at the 68th Diamond Conference, University of Warwick, UK. July 2017. O33
- D. Howell*, Y. Weiss, **K.V. Smit**, L. Loudin and F. Nestola. *DiaMap: New applications for processing IR spectra of fluid-rich diamonds and mapping diamonds containing isolated nitrogen (Type Ib) and boron (Type IIb)*. Poster Presentation at the 68th Diamond Conference, University of Warwick, UK. July 2017. P18
- K.V. Smit***, T. Stachel, R.A. Stern, S.B. Shirey and A. Steele. *Diamond formation through isochemical cooling of CHO fluids vs redox buffering: examples from Marange peridotitic and Zimmi eclogitic diamonds*. Oral Presentation at the General Assembly of the European Geosciences Union, Vienna, Austria. April 2017. EGU2017-9187-1

Karen V. Smit

K.V. Smit*, E.M. Smith, S.B. Shirey, A. Steele and R.A. Stern. *Reduced volatiles in the deep Earth: Raman evidence from lithospheric and sub-lithospheric diamonds*. Poster presentation at the 3rd Annual Deep Carbon Observatory Science Meeting. St. Andrews, Scotland. March 2017.

2016

K.V. Smit*, S.B. Shirey, R.A. Stern, D.G. Pearson, A. Steele and W. Wang. *The source of methane-bearing diamond fluids: C-N isotope and trace element constraints from Zimbabwe diamonds*. Oral presentation at the 10th GIA Research Meeting, Carlsbad, California. November 2016.

K.V. Smit*, R.A. Stern, S.B. Shirey, and W. Wang. *Unusual geological history of rare Type Ib diamonds and the reasons for their special colour*. Oral presentation at the 10th GIA Research Meeting, Carlsbad, California. November 2016.

K.V. Smit*, R.A. Stern, S.B. Shirey, and W. Wang. *Unusual geological history of rare Type Ib diamonds and the reasons for their special colour*. Oral presentation at the GSA conference, Denver, USA. September 2016.

K. S. Moe, P. Johnson, J-S. Yang, X. Xu, W. Wang and **K.V. Smit***, *Ophiolite-hosted Type Ib microdiamonds: spectroscopic evidence for their natural origin*. Oral presentation at the 35th International Geological Congress, Cape Town, South Africa, August 2016.

K.V. Smit*, S.B. Shirey and W. Wang. *Preservation of C centres in Ib diamonds due to rapid tectonic exhumation following Gondwana assembly: Re-Os age constraints of West African diamonds*. Oral presentation at the 35th International Geological Congress, Cape Town, South Africa, August 2016.

K.V. Smit*, S.B. Shirey, R.A. Stern, D.G. Pearson, A. Steele and W. Wang. *The source of methane-bearing diamond fluids: C-N isotope and trace element constraints from Zimbabwe diamonds*. Oral presentation at the 35th International Geological Congress, Cape Town, South Africa, August 2016.

K.V. Smit*, S.B. Shirey and W. Wang. *Type Ib diamond formation and preservation in the West African lithospheric mantle: Re-Os age constraints from sulphide inclusions in Zimmi diamonds*. Oral presentation at the DCO International Diamond School, Edmonton, Canada. June 2016.

2015

S.B. Shirey*, **K.V. Smit**, F. Nestola, A. Steele, G. Bulanova and C.B. Smith. *Neoproterozoic Re-Os age of a sulfide inclusion in a superdeep diamond: Implications for mantle convection beneath Juina, Brazil*. Oral presentation at the AGU Fall Meeting, San Francisco, USA. December 2015.

K.V. Smit*, S.B. Shirey, A. Steele, R.A. Stern and W. Wang. *Non-redox growth of Marange diamonds from CH₄-bearing recycled fluids*. Oral presentation at the 9th GIA Research Meeting, Carlsbad, California. November 2015.

K.V. Smit*, S.B. Shirey and W. Wang. *Type Ib diamond formation related to Gondwana assembly: evidence from Re-Os isotopic compositions of West African sulphides*. Oral presentation at the 9th GIA Research Meeting, Carlsbad, California. November 2015.

Karen V. Smit

- K.V. Smit***, S.B. Shirey and W. Wang. *Type Ib diamond formation related to Gondwana assembly: evidence from Re-Os isotopic compositions of West African sulphides*. Oral presentation at the GSA conference, Baltimore, USA. November 2015.
- S.B. Shirey*, **K.V. Smit**, F. Nestola, A. Steele, G. Bulanova and C.B. Smith. *Neoproterozoic Re-Os age of a sulfide inclusion in a superdeep diamond: Implications for mantle convection beneath Juina, Brazil*. Oral presentation at GSA conference, Baltimore, USA. November 2015.
- K.V. Smit***, S.B. Shirey, A. Steele, R.A. Stern and W. Wang. *Diamond growth in the lithospheric mantle: New SIMS and Raman evidence from Zimbabwe diamonds*. Oral presentation at Goldschmidt, Prague, Czech Republic, August 2015.
- S.B. Shirey*, **K.V. Smit**, E. Gaillou, S.H. Richardson and J.W. Harris. *Sources of diamonds from Orapa, Botswana and the evolution of the Kaapvaal-Zimbabwe cratons*. Oral presentation at Goldschmidt, Prague, Czech Republic, August 2015.
- K.V. Smit**, P. Westcott, M. Galarneau, T. Stachel*, R.A. Stern, A. Banas, J. Kong, I. Chinn and D. Fisher. *Destruction and renewed formation of diamonds in the Attawapiskat Kimberlite Field, Eastern Canada*. De Beers Diamond Conference, Warwick, UK. July 2015.
- W. Wang*, U.F.S. D'Haenens-Johansson, **K.V. Smit**, C.M. Breeding and R.A. Stern. *Carbon Isotope Analyses of CVD and Natural Type IIa Gem Diamonds*. Presentation at the 9th International Conference on New Diamond and Nano Carbons, Shizuoka, Japan. May 2015.
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