

Peer-reviewed publications by SA Gibson

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- [1] Gibb, F.G.F. & **Gibson, S.A.**, 1989. The Little Minch Sill Complex. *Scottish Journal of Geology*, v. 25, pp.367-370.
 - [2] **Gibson, S.A.**, 1990. The geochemistry of the Trotternish Sills, Isle of Skye: crustal contamination in the British Tertiary Volcanic Province. *Journal of the Geological Society of London*, v. 147, pp. 1071-1081.
 - [3] Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L. & **Gibson, S.A.**, 1990. Strongly potassic mafic magmas from lithospheric mantle sources during continental extension and heating: evidence from Miocene minettes of northwest Colorado, U.S.A. *Earth and Planetary Science Letters*, v. 98, pp. 139-53.
 - [4] **Gibson, S.A.** & Jones, A.P., 1991. Igneous stratigraphy and internal structure of the Little Minch Sill Complex on the Trotternish Peninsula, N. Skye, Scotland. *Geological Magazine*, v. 128, pp. 51-66.
 - [5] **Gibson, S.A.**, Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L. & Dickin, A.P., 1991. The Flat Tops volcanic field NW Colorado 1: Lower Miocene open-system multi-source magmatism at Flander, Trappers Lake. *Journal of Geophysical Research*, v. 96, pp. 13609-13627.
 - [6] Thompson, R.N. & **Gibson, S.A.**, 1991. Subcontinental mantle plumes, hot spots and pre-existing thinspots. *Journal of the Geological Society of London*, v. 148, pp. 973-977.
 - [7] **Gibson, S.A.**, Thompson, R.N., Leat, P.T., Dickin, A.P., Morrison, M.A., Hendry, G.L. & Mitchell, J.G., 1992. Asthenosphere-derived magmatism in the Rio Grande rift, western USA: implications for continental break-up. In Storey, B.C., Alabaster, T. & Pankhurst, R.J. (eds.) *Magmatism and the Causes of Continental Breakup*. Geological Society of London Special Publication, v. 68, pp. 61-89.
 - [8] **Gibson, S.A.**, Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L., Dickin, A.P. & Mitchell, J.G., 1993. Ultrapotassic magmas along the flanks of the Oligo-Miocene Rio Grande rift, USA: monitors of the zone of lithospheric extension and thinning beneath a continental rift. *Journal of Petrology*, v. 34, pp. 187-228.
 - [9] Thompson, R.N., **Gibson, S.A.**, Leat, P.T., Morrison, M.A., Hendry, G.L., Dickin, A.P. & Mitchell, J.G., 1993. Early-Miocene continental extension-related mafic magmatism at Walton Peak, Northwest Colorado: further evidence on continental basalts genesis. *Journal of the Geological Society of London*, v. 150, pp. 277-292.
 - [10] **Gibson, S.A.**, 1994. Review of 'Magmatism in Extensional Structural Settings' by A.B. Kampunzu & R.T. Lubala (eds). *Journal of Petrology*, v. 35, pp. 289.
 - [11] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Turner, S., Mitchell, J.G. & Dickin, A.P., 1994. The Serra do Bueno potassic diatreme: a possible hypabyssal equivalent of the ultramafic potassic volcanics in the Late Cretaceous Alto Paranaíba Igneous Province, SE Brazil. *Mineralogical Magazine*, v. 58, pp. 357-372.
 - [12] Thompson, R.N. & **Gibson, S.A.**, 1994. Magmatic expression of lithospheric thinning across continental rifts. *Tectonophysics*, v. 233, pp. 41-68.

- [13] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Dickin, A.P. & Mitchell, J.G., 1995. The Late Cretaceous impact of the Trindade mantle plume: evidence from large-volume, mafic, potassic magmatism in SE Brazil. *Journal of Petrology*, v. 36, pp. 189-229.
- [14] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H. & Dickin, A.P. 1995. High-Ti and Low-Ti mafic potassic magmas: Key to plume-lithosphere interactions and continental flood-basalt genesis. *Earth and Planetary Science Letters*, v. 136, pp. 149-165.
- [15] Leonardos, O.H., Fleischer, R., Thompson, R.N., **Gibson, S.A.**, Svisero, D.P. & Weska, R.K., 1996. Comments on the paper of G.M. Gonzaga et al., 'The origin of diamonds in western Minas Gerais, Brazil' *Mineral Deposita*, v. 31, pp. 343-344
- [16] Leonardos, O.H., **Gibson, S.A.**, Thompson, R.N., 1997. First evidence of thick sub-cratonic lithospheric mantle forming a Cretaceous diamond source beneath SE Brazil. In 'The Dynamic Geosphere, ed. A.K. Gupta & R. Kerrich. *Proc. Acad. Sci. India* (volume in honour of W.S. Fyfe), pp. 56-67.
- [17] **Gibson, S.A.**, Thompson, R.N., Weska, R., Dickin, A.P., Leonardos, O.H. 1997. Late Cretaceous rift-related upwelling and melting of the Trindade starting mantle plume head beneath western Brazil. *Contributions to Mineralogy and Petrology*, v. 126, pp. 303-314.
- [18] Thompson, R.N., Velde, D., Leat, P.T., Morrison, M.A., Mitchell, J.G., Dickin, A.P. & **Gibson, S.A.**, 1997. Oligocene lamproite containing an Al-poor Ti-rich biotite, Middle Park, northwest Colorado, USA. *Mineralogical Magazine*, v. 61, pp. 557-572.
- [19] Thompson, R.N., **Gibson, S.A.**, Mitchell, J.G., Dickin, A.P., Leonardos, O.H., Brod, J.A. & Greenwood, J.C., 1998. Migrating Cretaceous-Eocene magmatism in the Serra do Mar alkaline province, SE Brazil: melts from the deflected Trindade mantle plume? *Journal of Petrology*, v. 39, pp. 1493-1526.
- [20] Rao, N. V. C., **Gibson, S. A.**, Pyle, D. M., Dickin, A. P., 1998. Contrasting isotopic mantle sources for Proterozoic lamproites and kimberlites from the Cuddapah Basin and Eastern Dharwar craton: implication for Proterozoic mantle heterogeneity beneath Southern India. *Journal of the Geological Society of India*, v. 52, pp. 683-694.
- [21] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Dickin, A.P. & Mitchell, J.G. 1999. Localised plume-lithosphere interactions during CFB genesis: geochemical evidence from Cretaceous magmatism in southern Brazil. *Contributions to Mineralogy and Petrology*, v. 137, pp. 147-169.
- [22] Greenwood, J. C., **Gibson, S. A.**, Thompson, R. N., Weska, R. K., Dickin, A. P., 1999. Cretaceous kimberlites from the Paranatinga-Batovi region, Central Brazil: Geochemical evidence for subcratonic lithosphere mantle heterogeneity. *Proceedings of the Seventh International Kimberlite Conference*, v. 1, pp. 291-298
- [23] Rao, N.V.C., Miller, J.A., **Gibson, S.A.**, Pyle, D.M. & Madhavan, 1999. Precise $^{40}\text{Ar}/^{39}\text{Ar}$ age determinations of kimberlites and lamproites from southern India. *Journal of the Geological Society of India*, v. 53, pp. 25-432
- [24] Rao, J. V. C., Miller, J. A., **Gibson, S. A.**, Pyle, D. M., Madhavan, V., 1999. Precise $^{40}\text{Ar}/^{39}\text{Ar}$ age determination of the Kotakonda kimberlite and Chelima lamproite, India: implication to the timing of mafic dyke swarm emplacement in the Eastern Dharwar craton. Reply. *Journal of the Geological Society of India*, v. 54, pp. 205-209
- [25] **Gibson, S.A.**, Thompson, R.N. & Dickin, A.P., 2000. Ferropicrites: geochemical

evidence for Fe-rich streaks in upwelling mantle plumes. *Earth and Planetary Science Letters*, v. 174, pp. 355-374

- [26] Mahotkin, I. L. **Gibson, S.A.**, Thompson, R. N., Zhuravlev, D. Z. & P. U.Zherdev, 2000. Late Devonian Diamondiferous Kimberlite and Alkaline Picrite (Proto-kimberlite?) Magmatism in the Arkhangelsk Region, NW Russia. *Journal of Petrology*, v. 41, pp. 201-227.
- [27] Thompson, R.N. & **Gibson, S.A.**, 2000. Transient high temperatures in mantle plume heads inferred from magnesian olivines in Phanerozoic picrites. *Nature*, v. 407, pp. 502-505.
- [28] Junqueira-Brod, T.C., Brod, J.A., Thompson, R.N. & **Gibson, S.A.** 1999. Spinning droplets-A conspicuous lapilli-size structure in kamafugitic diatremes of Southern Goiás, Brazil. *Revista Brasileira de Geociencias*, v. 29, pp. 437-440
- [29] Brod, J.A., **Gibson, S.A.**, Thompson, R.N., Junqueira-Brod, T.C., Seer, J.H., Moraes, L.C de & Boaventura, G.R., 2000. The kamafugite-carbonatite association in the Alto Paranaiba Igneous Province (APIP) southeastern Brazil. *Revista Brasileira de Geociencias*, v. 30, pp. 404-408.
- [30] Junqueira-Brod, T.C., Brod, J.A., **Gibson, S.A.** & Thompson, R.N., 2000. Mineral chemistry of kamafugites and related rocks from the Aguas Emendadas region Goias state. *Revista Brasileira de Geociencias*, v. 30, pp. 399-403.
- [31] J.A. Brod, Gaspar, J.C., de Arauajo, D.P., **Gibson, S.A.**, R.N. Thompson, Junqueira-Brod, T.C. 2001. Phlogopite and tetra-ferriphlogopite from Brazilian carbonatites complexes: petrogenetic constraints and implications for mineral-chemistry systematics. *Journal of Asian Earth Sciences*, v. 19, pp. 265-296.
- [32] Thompson, R.N., **Gibson, S.A.**, Dickin, A.P. & Smith, P., 2001. Early Cretaceous basalt and picrite dykes of the Southern Etendeka region, NW Namibia: windows into the role of the Tristan mantle plume in Paraná-Etendeka magmatism. *Journal of Petrology*, v. 42, pp. 2049-2081.
- [33] **Gibson, S.A.**, 2002. Major element heterogeneity in Archean to recent mantle plume starting-heads. *Earth and Planetary Science Letters*, v. 195, pp. 59-74.
- [34] Thompson, R. N., Smith, P. M., **Gibson, S. A.**, Mattey, D. P., Dickin, A. P., 2002. Ankerite carbonatite from Swartbooisdrif, Namibia: the first evidence for magmatic ferrocarbonatite. *Contributions to Mineralogy and Petrology*, v. 143, pp. 377-395
- [35] Anand, M. , **Gibson, S. A.**, Subbarao, K. V., Kelley, S. P., Dickin, A. P. 2003. Early Proterozoic melt generation processes beneath the intra-cratonic Cuddapah Basin, Southern India. *Journal of Petrology*, v. 44, pp. 2139-2171
- [36] Chalpathi Rao, N. V., **Gibson, S. A.**, Pyle, D. M., Dickin, A. P., 2004. Petrogenesis of Proterozoic lamproites and kimberlites from the Cuddapah Basin and Dharwar Craton, Southern India. *Journal of Petrology*, v. 45, pp. 907-948
- [37] Johnson, J., **Gibson, S.A.**, Thompson, R.N. & Nowell, G.M., 2005. Volcanism in the Vitim Field, Siberia: geochemical evidence for a mantle plume beneath the Baikal Rift Zone. *Journal of Petrology*, v. 46, pp. 1309-1344
- [38] Thompson, R.N., Ottley, C.J., Smith, P.M., Pearson, D.J., Morrison, M.A., Leat, P.T. & **Gibson, S.A.**, 2005. The puzzle of OIB-like continental alkalic magmatism: Quaternary

alkalic basalts, picrites and basanites of the Potrillo Volcanic Field, New Mexico, USA. *Journal of Petrology*, v. 46, pp. 1603-1643.

- [39] Rao, N.V.C., **Gibson, S. A.**, Pyle, D.M., Dickin, A.P., Day, J.A. 2005. Petrogenesis of Proterozoic Lamproites and Kimberlites from the Cuddapah Basin and Dharwar Craton, Southern India: a Reply *Journal of Petrology*, v. 46, pp. 1081-1084.
- [40] Tuff, J., Takahasi, E. & **Gibson, S.A.** 2005. Experimental Constraints on the Role of Garnet Pyroxenite in the Genesis of High-Fe Mantle Plume Derived Melts. *Journal of Petrology*, v. 46, pp. 2023-2058
- [41] **Gibson, S. A.**, Thompson, R.N., Day, J., Humphris, S.E., Dickin, A.P., 2005. Melt generation processes associated with the Tristan mantle plume: constraints on the origin of EM-1. *Earth and Planetary Science Letters*, v. 237, pp. 744-767
- [42] **Gibson, S.A.**, Thompson, R. N., Day, J.A., 2006. Timescales and mechanisms of plume-lithosphere interactions: $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology and geochemistry of alkaline igneous rocks from the Paraná-Etendeka large igneous province. *Earth and Planetary Science Letters*, v. 251, pp. 1-17.
- [43] **Tuff, J. & Gibson, S.A.**, 2007. Trace-element partitioning between garnet, clinopyroxene and Fe-rich picritic melts at 3 to 7 GPa. *Contributions to Mineralogy and Petrology*, v. 4, pp. 369-387.
- [44] **Gibson, S.A.**, Malarkey, J. & Day, J.A., 2008. Melt Depletion and Enrichment beneath the Western Kaapvaal Craton: Evidence from Finsch Peridotite Xenoliths. *Journal of Petrology*, v. 49, pp. 1817-1852.
- [45] Herbert, S., **Gibson, S.A.¹**, Norman, D., Geist, D., Estes, G., Grant, T., Miles, A., 2009. Into the field again: re-examining Charles Darwin's 1835 geological work on Isla Santiago in the Galápagos archipelago. *Earth Sciences History*, v. 28 (1). pp. 1-31.
- [46] Ayalew D. & **Gibson, S.A.¹**, 2009. Head-to-tail transition of the Afar mantle plume: Geochemical evidence from a Miocene bimodal basalt-rhyolite succession in the Ethiopian Large Igneous Province. *Lithos*, v. 112, pp. 461-476
- [47] **Gibson, S. A.**, 2010. Darwin the geologist in Galápagos: An early insight into sub-volcanic magmatic processes. *Proceedings of the California Academy of Sciences*, v. 61 (Supp II). pp. 69-88.
- [48] **Gibson, S. A.** & Geist, D., 2010. Geochemical and geophysical mapping of lithospheric thickness variations beneath Galápagos. *Earth and Planetary Science Letters*, v. 300 (3-4). pp. 275-288.
- [49] **Gibson, S. A.**, Geist, D., Day, J.A. & Dale, C.W., 2012. Short wavelength heterogeneity in the Galápagos plume: evidence from compositionally-diverse basalts on Isla Santiago. *Geochemistry, Geophysics, Geosystems*, v. 13, pp. 4244-4267.
- [50] **Gibson, S.A.**, McMahon, S.C., Day, J.A. & Dawson, J.B. (2013). Highly-refractory lithospheric mantle beneath the Tanzanian Craton: evidence from Lashaine pre-metasomatic garnet-bearing peridotites. *Journal of Petrology*, v. 54, pp. 1503-1546.
- [51] **Gibson, S. A.**, Geist, D. & Richards, M.A. (2015). Mantle plume capture, anchoring and outflow during Galápagos plume-ridge interaction. *Geochemistry, Geophysics, Geosystems*,

v. 16, pp. 1634-1655.

- [52] Richards, M.A., Alvarez, W., Self, S., Karlstrom, L., Renne, P.R., Manga, M., Sprain, C.J., Smit, J., Vanderkluysen, L., **Gibson, S.A.** (2015). Triggering of the largest Deccan eruptions by the Chicxulub impact. *Geological Society of America*, v. 127, pp.1507-1520
- [53] Neave, D.A., Black, M., Riley, T.R., **Gibson, S. A.**, Ferrier, G., Wall, F. (2016). On the Feasibility of Imaging Carbonatite-Hosted Rare Earth Element Deposits Using Remote Sensing. *Economic Geology*, v. 111, pp. 641-665.
- [54] **Gibson, S. A.**, Dale, C.W., Geist, D.G., Day, J.A., Brugmann, G., Harpp, K.S. (2016). The influence of melt flux and crustal processing on Re-Os isotope systematics of ocean island basalts: Constraints from Galápagos *Earth and Planetary Science Letters*, v.449, pp. 345-359
- [55] Miller, W.G.R., Holland, T.J.B. & **Gibson, S.A.** (2016). Garnet and spinel oxybarometers: New internally consistent multi-equilibria models with applications to the oxidation state of the lithospheric mantle. *Journal of Petrology*, v. 57, pp. 1199-1222
- [56] Jennings, E., Holland, T.J.B.H., Shortle, O., Maclennan, J. & **Gibson, S.A.** (2016). The composition of melts from a heterogeneous mantle and the origin of ferropicrite: Application of a thermodynamic model. *Journal of Petrology*, v. 57, pp. 2289-2310.
- [57] Weit, A., Trumbull, R.B., Keiding, J.K., X Geissler, W.H., **Gibson, S.A.**, Veksler, I.V., (2016). The magmatic system beneath the Tristan da Cunha hotspot: insights from thermobarometry, melting models and geophysics. *Tectonophysics* doi.org/10.1016/j.tecto.2016.08.010. 13 pp
- [58] Richards, M.A., Alvarez, W., Self, S., Karlstrom, L., Renne, P.R., Manga, M., Sprain, C.J., Smit, J., Vanderkluysen, L., **Gibson, S.A.** (2017). Triggering of the largest Deccan eruptions by the Chicxulub impact. *Geological Society of America* (response), v. 129, pp. 256.
- [59] Jennings, E., **Gibson, S.A.**, Maclennan, J. & Heinonen, J. (2017). Deep mixing of mantle melts beneath continental flood basalt provinces: Constraints from olivine-hosted melt inclusions in primitive magmas. *Geochimica Cosmochimica Acta*, v. 196, pp. 36-57.
- [60] **Gibson, S. A.** (2017). 45th Hallimond Lecture: On the nature and origin of garnet in highly-refractory Archean lithospheric mantle: constraints from exsolved garnet in orthopyroxene from the Kaapvaal craton. *Mineralogical Magazine*, v. 81, pp. 781-809.