



Bryony Richards, PhD

SENIOR PETROLOGIST

Senior Petrologist Bryony Richards joined EGI in 2012 as a Research Scientist. After earning a B.Sc. Hons at the University of Durham and a Ph.D. in Geology from Royal Holloway College, UK, she subsequently completed postdoctoral research at the University of Johannesburg, South Africa in conjunction with a number of mining companies related to the assessment and development of kimberlites in southern Africa. Professional industry experience includes the evaluation and development of mineral prospects in Africa, with an emphasis on the geochemistry of sedimentary basins, basin/facies analysis, and sediment-hosted mineral deposits. Her work included the interpretation and development of geochemical surveys (soil, rock, and drilling) from reconnaissance and small-scale to full, extensive geochemical programs. She has a recognized background in integrated techniques utilizing mineralogy/petrology, inorganic geochemistry, radiochemistry, and the evaluation and interpretation of complex, multiple technique databases. Her ongoing research includes the evaluation of hydrocarbon potential in various unconventional reservoirs across the world.

At EGI, Bryony's focus is on the development of integrated analytical approaches for the advancement of conventional and unconventional reservoir understanding, exploration, and development as well as understanding to what degree petrofabrics (microtectonics) within shales can reveal greater basin conditions.

Dr. Richards' publications include mineralogical/petrological, geochemical, and radiochemical studies across a diverse range of geological settings related to both academia and industry work, ranging from tectonics and small-volume magmatism, to kimberlites and sediment-hosted copper deposits. Select publications include EGI reports from South America; China, United Kingdom, United States, India and Central Eurasia, focusing on the advancement of shale reservoir characterization using integrated petrological techniques.

Research Experience

- Interpretation of complex databases
- Integrated mineralogical workflow characterization of unconventional reservoir rocks, using macro to nano-scale integrated methods.
- Integrated low-resolution petrological analyses.
- High-resolution (micro- to nano-scale) microscopy for advanced petrological analyses and interpretation including; Ar-ion milling, microprobe, SEM, FIB-SEM and TEM/STEM analyses.
- Integrated imaging techniques including; large composite imaging of SEM analyses, 3D modeling using FIB-SEM and computed tomography.
- Radiochemical techniques including; $^{40}\text{Ar}/^{39}\text{Ar}$ thermochronology, U-Pb geochronology and stable isotopes ($\delta^{18}\text{O}$).

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Research Interests

- Mineralogy and geochemistry
- Radiochemistry (thermo-chronology, stable isotopes)
- Micro to nano-scale mineralogy
- Integrated mineralogy (petrography, microprobe, XRD, QEMSCAN[®], SEM, SEM-FIB)
- Characterization of shales using SEM-FIB
- Integration of mineralogy and computing technology
- Microtectonics (petrofabrics)



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