

FULLY INDUSTRY FUNDED Ph.D PROJECT

Structural, fluid and geochemical controls on Proterozoic, shear-hosted Au mineralization in the Loulo mining district, Mali

Prof. A. Rankin, Dr P. Treloar & Mr P. Harbidge (RandGold)

The project, fully sponsored by Randgold, will involve a field and laboratory study of the geological controls of economic gold mineralization within the recently developed, Proterozoic, shear-hosted, Loulo and Yalea deposits of SW Mali. The deposits are contained within folded and faulted tourmaline bearing units and an intercalated package of greywackes and siltstones of Birimian age (c.2 Ga). Particular emphasis will be placed on understanding the structural controls on mineralization, the role of fluids in controlling hydrothermal mineralization and alteration, the nature and origin of the mineralizing fluids, and how this information can be used to guide future exploration strategies. Geological mapping and sampling, designed to complement existing company data, will be carried out during field visits to the mines and surrounding areas.

The specific aims and objectives of the project are to: determine a paragenetic sequence of mineralization and alteration; establish structural and geochemical constraints on mineralization; model fluid sources and chemistries; develop and test a genetic model for mineralization and develop a model for future exploration. Laboratory studies will involve textural, mineralogical and geochemical studies of the host lithologies and related hydrothermal mineralization and alteration. A comprehensive analytical data will be generated to constrain the chemistry of successive alteration haloes. Together with a detailed analysis of the structural and lithological controls on fluid migration and subsequent alteration and mineralization this will form the basis for extensive fluid inclusion to determine the chemistries and PVT properties of the various fluid generations. The field and laboratory data will be used, together with stable isotope data, to constrain the origin of the mineralizing fluids and the extent to which differences in gold grades correlate with lithological and structural variations and differences in the pressure, temperature and composition of the hydrothermal fluids.

The PhD student will receive comprehensive training in the use and application of a wide range of mineralogical, geochemical and fluid inclusion techniques which will include Laser-ICP-MS, Scanning Electron Microscopy, Microthermometry and Laser Raman Spectroscopy. Training will also be provided in field techniques and geochemical/fluid modeling as appropriate. On successful completion of the PhD the student will be well prepared to pursue a career in either the minerals industry or in academia.

Applications should be received by 31 May. Information on how to apply can be obtained from **Dr Stella Bignold, School of Earth Sciences and Geography, Kingston University, Kingston upon Thames, Surrey KT1 2EE (tel: 020 8547 8850 or e-mail: s.bignold@kingston.ac.uk).** Candidates are encouraged to contact Dr Peter J. Treloar (p.treloar@kingston.ac.uk) to discuss the project before applying. Information about the School can be found at <http://www.kingston.ac.uk/esg/>