**The Sorby Conference on Fluid and Melt Inclusions**

**ECROFI-XXIII**

**School of Earth and Environment**

**University of Leeds June 27th to 29th 2015**

**Organised by**

**Bruce Yardley**

**David Banks**

**Jason Harvey**

**Delia Cangelosi**

**Matthew Grimshaw**

**Lubomira Tomanikova**

***The Organisers wish to thank***

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***The Geochemistry Group***

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***The Mineral Deposits Studies Group***

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***Society for Geology Applied to Ore Deposits***

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***WITec GmbH***



***Volcanic and Magmatic Studies Group***

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| **The Sorby Conference on Fluid and Melt Inclusions**  **ECROFI-XXIII** | | | |
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| Friday 26th June: Earth and Environment Building | | | |
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| **18:00 - 20:00 Registration and Ice Breaker Reception.** | | | |
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| Saturday 27th June: Earth and Environment Building | | | |
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| 08:30 Onwards, Registration | | | |
| **09:00 Welcome** | | | |
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| **Analytical Methods** | | | |
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|  |  | 09:15 | ***Keynote Presentation***  Recent Advances in the Analysis of Volatiles and Fluid-Mobile Elements in Melt Inclusions by Secondary Ion Mass Spectrometry (SIMS).  **Jan C. M. De Hoog**, R. W. Hinton & EIMF |
|  |  | 09:45 | Analytical advances in studying melt inclusions: a HR-Raman and FIB-SEM case study of carbonate melt inclusions in jacupirangite from Kerimasi (Tanzania). **Réka Káldos**, Tibor Guzmics, Tamás Váczi, Adrienn Baris, Márta Berkesi, Károly Havancsák, Zoltán Dankházi, Csaba Szabó |
|  |  | 10:00 | How Mineral Infillings Crystallize In Multiphase Inclusions From UHP Fluid Phase: First In Situ Synchrotron X-ray Measurements.  **Nadia Malaspina**, Matteo Alvaro, Marcello Campione, Fabrizio Nestola |
|  |  | 10:15 | Linkam Presentation,  **Duncan Stacey** |
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| **10:30 Coffee Break** | | | |
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|  |  | 11:00 | Analysing Pb-isotopes in single inclusions. **Thomas Pettke** |
|  |  | 11:15 | Identification of CaCl2-bearing daughter minerals in natural inclusions.  **Svetlana Grishina**, Jean Dubessy, Lucas Uriarte, Sergey Goryanov & Igor Yakovlev |
|  |  | 11:30 | In Situ Identification of the S3– Ion in S-rich Hydrothermal Fluids from Synthetic Fluid Inclusions.  **Nicolas Jacqueme**t, Damien Guillaume, Antoine Zwick, & Gleb S. Pokrovski |
|  |  | 11:45 | Sulfur forms in the hydrothermal fluids and their role in ore formation.  **Alexandr S. Borisenko**, Andrey A. Borovikov, Ivan D. Borisenko, Nikolay S. Bortnikov, Vsevolod Yu. Prokofiev, Olga V. Vikent'eva, Gennady N. Gamyanin, Ivan V. Gaskov |
|  |  | 12:00 | The role of illites in determination the age and origin of hydrothermal fluids, Biga Peninsula, NW Turkey.  Gülcan Bozkaya, **Ömer Bozkaya**, I.Tonguc Uysal, David A. Banks |
|  |  | 12:15 | Reassessment of the Raman densimeter of CO2.  **Hector M. Lamadrid**, Lowell Moore, Daniel Moncada, Donald Rimstidt & Robert J. Bodnar |
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| **12:30 Lunch** | | | |
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| **Magmatic Systems** | | | |
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|  |  | 13:30 | ***Keynote Presentation***  Volatile concentrations of silicate melt inclusions: Insights into processes in active volcanic systems.  **Rosario Esposito**, Matthew Steele-MacInnis, Lowell R. Moore, and Robert J. Bodnar |
|  |  | 14:00 | Unlocking the Evolution of the Grey Porri Tuffs of Monte dei Porri, Salina, Southern Italy: a Complete Picture Using Melt Inclusion Geochemistry and Volatile Contents.  **Angela L. Doherty**, Claudia Cannatelli, Harvey E. Belkin, Robert J. Bodnar, & Benedetto De Vivo |
|  |  | 14:15 | Insights into Pre-Campanian Ignimbrite volcanism in the Campanian Plain (Southern Italy): a Melt Inclusions Approach.  **Claudia Cannatelli**, Angela L. Doherty, Paola Petrosino, Harvey E. Belkin, Giuseppe Rolandi, Annamaria Lima, Stefano Albanese, & Benedetto De Vivo |
|  |  | 14:30 | Using synthetic fluid inclusions as mini batch reactors to monitor serpentinization reactions in the oceanic lithosphere.  **Hector M. Lamadrid**, Esther Schwartzenbach, Donald Rimstidt & Robert J. Bodnar |
|  |  | 14:45 | Volatile Exsolution Experiments: Trapping Exsolved Fluids.  **Brian C. Tattitch** & Jon M. Blundy |
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| **15:00 Coffee Break** | | | |
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|  |  | 15:30 | The effects of densimeter choice on reconstructing the pre-eruptive CO2 content of magmas based on Raman analysis of vapor bubbles in melt inclusions.  **Lowell R. Moore**, Héctor M. Lamadrid, Daniel Moncada, Robert J. Bodnar |
|  |  | 15:45 | Fluid inclusion study of VMS-related stockwork and stratiform deposits in the Northern Apennine Ophiolites (Italy).  **Gabriella B. Kiss**, Giorgio Garuti, Federica Zaccarini, Zsuzsanna Kapui |
|  |  | 16:00 | Fluid inclusion study on LCT pegmatites from Bikita, Zimbabwe craton - constraints on a magmatic-hydrothermal model.  **Lisa Richter**, Thomas Dittrich, Steffen Hagemann, Thomas Seifert & David Banks |
|  |  | 16:15 | Comparison of fluid inclusion studies in cordierite-andalusite-rich leucogranite dykes and tourmaline-bearing aplite-pegmatite dykes (Elba, Italy).  **Ronald J. Bakker**, & Sebastian E. Schilli |
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| **16:30 - 17:00 Introduction to Posters** | | | |
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| **17:00 - 18:30 Poster session (note posters to be removed at close of conference on Sunday)** | | | |
| **17:30 Drinks Reception** | | | |
| **19:30 Conference Dinner, University Refectory** | | | |
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| Sunday 28th June: Earth and Environment Building | | | |
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| **Fluids in Porphyry and Epithermal Systems** | | | |
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|  |  | 09:30 | A Record of Cu-Au Mineralizing Fluids over a 2-km Vertical Range in the Ertsberg East Skarn System, Ertsberg-Grasberg District, Papua, Indonesia.  **J. Richard Kyle**, Matthew Ledvina, & Stefanie Frelinger |
|  |  | 09:45 | Deep porphyry veins at Cerro de Pasco, Peru: Constraints from mineral, fluid and silicate melt inclusions in hydrothermal quartz.  **Bertrand Rottie**r, Kalin Kouzmanov, Markus Wälle, Luís Fontboté |
|  |  | 10:00 | Explosive brecciation and base-metal-Au mineralization at Koru, NW Turkey. P-T-x of the hydrothermal fluids.  **Gülcan Bozkaya** & David A. Banks |
|  |  | 10:15 | Properties of fluid inclusions from potassic alteration zone of Karakartal deposit (Erzincan, Central Eastern Turkey).  **Oğuzhan Gümrük**, Miğraç Akçay & David A. Banks |
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| **10:30 Coffee break** | | | |
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|  |  | 11:00 | Hydrothermal evolution from porphyry to epithermal system: Insights from fluid inclusion and stable isotope studies of the Qibaoshan Cu-Au deposit, southeastern North China Craton.  **Hong-Rui Fan** & Wen-Gang Xu, Fang-Fang Hu, Kui-Feng Yang |
|  |  | 11:15 | Porphyry and Epithermal deposits of the Urals: P-T-x-parameters.  **E.O. Groznova**, O.Yu. Plotinskaya, S.S. Abramov, A.A. Borovikov, S. Milovska, J. Luptakova, R. Seltmann |
|  |  | 11:30 | Effect of CO2 on salinity determinations for fluid inclusions from the epithermal environment.  **Daniel Moncada**, Lowell Moore, Héctor M. Lamadrid, Robert J. Bodnar |
|  |  | 11:45 | Preliminary Microthermometric Data from the Kışladağ Au Deposit, Western Turkey: Porphyry / Porphyry-Epithermal transition?  **Nurullah Hanilçi**, Gülcan Bozkaya, David A. Banks, Vsevolod Prokofiev, Yücel Öztaş |
|  |  | 12:00 | Identification of daughter crystals in polyphase fluid inclusions: Implications for fluid chemistry at the Bingham Canyon porphyry deposit, Utah.  **Simon Kocher** & Jamie J. Wilkinson |
|  |  | 12:15 | Mineral Composition of Salt Melt Inclusions of the Porphyry Gold Deposit Biely Vrch (Slovakia).  **Peter Koděra**, Ágnes Takács, Tamás Váczi, Jarmila Luptáková & Peter Antal |
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| **12:30 Lunch** | | | |
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|  |  | 13:30 | Hydrosilicate liquids: unconventional agents of metal transport in porphyry ore systems.  **Jamie J. Wilkinson**, Olga Vasyukova, Jamie S. Laird, Chris Ryan & Dima Kamenetsky |
|  |  | 13:45 | Source of brines and metal transport in the Kiruna district, Sweden: Evidence from fluid inclusions.  **M.P. Smith**, S.Gleeson, N. Bernal & B.W.D. Yardley |
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| **14:00 - 14:30 Discussion: Fluids in Porphyry and Epithermal Systems.** | | | |
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| **Gold Mineralization** | | | |
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|  |  | 14:30 | ***Keynote Presentation***  Fluid Inclusion Gold Concentrations: From Analysis to Implications for Hydrothermal Ore Formation.  **Thomas Pettke** & Larryn W. Diamond |
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|  | **15:00 Coffee Break** | | |
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|  |  | 15:30 | Different carbon reservoirs of auriferous fluids in African Archean and Proterozoic gold deposits? Constraints from stable carbon isotopic compositions of quartz-hosted CO2-rich fluid inclusions.  **Volker Lüders**, Reiner Klemd, Thomas Oberthür & Lisa Richter |
|  |  | 15:45 | Fluid Inclusion LA-ICPMS Analysis of Ore Fluids from Orogenic Gold Deposits of the Late Archean Hattu Schist Belt, Eastern Finland.  **Tobias Fusswinkel**, Thomas Wagner, Grigorius Sakellaris |
|  |  | 16:00 | Fluid Inclusions in Quartz from the Gold Mineralization at a Depth of 10 km.  **Vsevolod Yu. Prokofiev**, Konstantin V. Lobanov, Mikhail V. Chicherov & Alexander A. Pek |
|  |  | 16:15 | CO2-rich Fluid Inclusions in Vein Gold-Copper Mineralization of the Sarekoubu-Qiaxia District, Southern Altaides, China.  **Jiuhua Xu**, Longhua Lin, Rui Yang, Xing Xiao |
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| **16:30 Business Meeting** | | | |
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| Monday 29th June **Michael Sadler Building LG19 (Note Change of Venue)** | | | |
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| **Quartz Veins** | | | |
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|  |  | 09:00 | ***Keynote Presentation***  What can we learn from fluid inclusions in ductilely deformed quartz?  **Larryn W. Diamond** & Alexandre Tarantola |
|  |  | 09:30 | Evolution of Carbonic Fluids in Crack-sealed Quartz veins.  **Laura González-Acebrón**, MaialenLópez-Elorza, José Ramón Mas, José Arribas, Robert H. Goldstein |
|  |  | 09:45 | Dauphiné Twin Planes in Quartz Trap Fluid Inclusions and Indicate Paleostress in Deeply Buried Sandstones.  **András Fal**l, Estibalitz Ukar, Randall Marrett, & Stephen E. Laubach |
|  |  | 10:00 | PVTX Evolution and Re-equilibration of Prograde and Retrograde Fluid Inclusions in Diagenetic and Metamorphic Rocks, Central Alps, Switzerland.  **Mullis Josef**, & Tarantola Alexandre |
| **Sedimentary and Hydrocarbons** | | | |
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|  |  | 10:15 | ***Keynote Presentation***  Hydrocarbon inclusions, an efficient proxy for basin modelling through time and space.  **Jacques Pironon** |
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| **10:45 Coffee Break** | | | |
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|  |  | 11:15 | Isotope Geochemistry (87Sr/86Sr, δ18O, δ34S, δD), Fluid Inclusion and Raman Micro-Spectroscopy of Celestine Deposits from the Evaporitic Sarkısla-Celalli Sub-Basin in the Tertiary Sivas Basin, Turkey.  **Ali Ucurum**, Cigdem Sahin Demir, Greg B. Arehart, Ernst Pernicka, Ferenc Molnar, Ronald J. Bakker |
|  |  | 11:30 | Fluid Inclusion and Pb Isotope Evidence for the Origin of Mississippi Valley-type Mineralization in the North American Mid-Continent: Insights from Trace Occurrences of Mineralization.  **Joshua D. Field**, Martin S. Appold, & Raymond M. Coveney, Jr. |
|  |  | 11:45 | ***Keynote Presentation***  The role of hydrothermal fluids in the formation of high grade BIF-hosted iron ore deposits.  **Steffen G. Hagemann** |
|  |  | 12:15 | Constraining the source of Archean fluids involved in the formation of BIF-hosted hypogene iron ores in the Yilgarn Craton of Western Australia.  **Paul Duuring**, Steffen G. Hagemann, David A. Banks, Christian Schindler & Thomas Angerer |
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| **12:30 Lunch** | | | |
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| **Experimental and Theoretical Studies** | | | |
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|  |  | 13:30 | H2O-NaCl fluid inclusions in wonderland.  **Ronald J. Bakker** |
|  |  | 13:45 | Liquid-vapor partitioning behavior of sodium and potassium in the system H2O-NaCl-KCl at 600-800OC and 500-750 bars.  **D. Matthew Sublet**t & Robert J. Bodnar |
|  |  | 14:00 | Microthermometric data of stretched and super-cooled liquid water obtained from high-density synthetic fluid inclusions.  **Chen Qiu**, Yves Krüger, Max Wilke, Dominik Marti, Jaro Rička, and Martin Frenz |
|  |  | 14:15 | Role of dissolved gases in the formation of liquid inclusions.  **Emilie Bobo**, Valérie Dupray, Samuel Petit & Gérard Coquerel |
|  |  | 14:30 | The Smaller the Harder: Theorization of a Threshold Size below which Fluid Inclusions do not Decrepitate.  **Marcello Campione**, Nadia Malaspina, Eduardo Oglialoro, & Maria Luce Frezzotti |
|  |  | 14:45 | Importance of melt inclusions in study of carbonatites: insight into Kerimasi melt evolution.  **Tibor Guzmics**, Réka Káldos, Zoltán Zajacz, Csaba Szabó |
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| **15:00 Close of Meeting …. Coffee** | | | |
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| **15:30 North Pennine Mineralization Logistics of field trip and examination of mineralized samples. (EVL if Available)** | | | |
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| **Poster Presentations** | | | |
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| How microthermometry and eq. mass fraction NaCl can spoil your highly sophisticated LA-ICP-MS data of fluid inclusions  **Ronald J. Bakker** | | | |
| Composition and metal-bearing capacity of the ore-forming fluids of the Late Mesozoic alkaline complexes in the Aldan shield (Russia)  Andrey A. Boroikov, **Alexandr S. Borisenko** , Ivan V. Gaskov, Ivan D. Borisenko, Anna G. Doroshkevich, Nikolay V. Vladykin, Ilia R. Prokopiev | | | |
| Evidence of sulphate-rich fluid associated with an enriched heavy rare earth element carbonatite, Huanglongpu deposit, China  **Delia Cangelosi,** Martin Smith, Bruce Yardley and David Banks | | | |
| Magmatic CO2-H2O-S fluids at Mt. Somma-Vesuvius: Insights from shrinkage bubbles of melt inclusions  **Rosario Esposito**, Hector La Madrid, Leonid V. Danyushevsky, Daniele Redi, Claudia Cannatelli, Matthew Steele-MacInnis, Annamaria Lima, Robert J. Bodnar, Benedetto De Vivo | | | |
| Fluid Chemistry of High Grade Iron Mineralization at Piçarrão-Liberdade Deposit, Brazil  **Sylvio D. Gomes**, Rosaline C. Figueiredo e Silva, Carlos A. Rosièr1, Lydia M. Lobato, Steffen Hagemann & David A. Banks | | | |
| Unravelling the Origin of the Bahariya Ironstone of Egypt  Adel Mady Afify1, , **Laura González-Acebrón,** María Esther Sanz-Montero& Jose Pedro Calvo | | | |
| Development of a deposit model for the giant gold orebody at Lone Star in the Klondike, Yukon.  **Matthew Grimshaw**, Rob Chapman and Graham McLeod | | | |
| Fluid inclusion studies on rare metal enriched pegmatites  Marieta Freitas, Alexandra Carolino, **Alexandra Guedes** & Fernando Noronha | | | |
| The Sulphur Isotopes and Fluid Inclusion Characteristics of the Madenköy (İmranlı) Cu-Pb-Zn±Ag Mineralization, Sivas, Turkey  Serkan Şenkaya & **Nurullah Hanilçi** | | | |
| Polymineralic Inclusions Representing In Situ Melting in Garnet of Eclogite-Facies Metapelites during Uplift and Heating  **Petra Herms**, Andreas Möller, Peter Appel & Peter Raase | | | |
| Fluid inclusions in apatite indicate low-temperature, metasomatic-infiltration origin of the Evate carbonatite deposit (Mozambique)  **Vratislav Hurai**, Monika Huraiová | | | |
| CH4-N2-CO2-H2O-NaCl fluid inclusions in Praid salt rock, (Transylvania, Romania)  Orsolya R. Kátai, **Réka Káldos**, Attila Tóth, Csaba Szabó | | | |
| Genetical study of the fluorite veins of Pécsely (Balaton Highland, Transdanubian Mountain Range, NW-Hungary)  **Zsuzsa Molnár**, Gabriella B. Kiss, István Dunkl, Tamás Váczi, Federica Zaccarini, & István Dódony | | | |
| Contribution to the genesis of the Covide layered pegmatite (Portugal)  **António Moura**, Jens Götze, Stuart Kearns | | | |
| P-T-X conditions of hydrothermal fluids of base-metal-gold mineralization at the Tesbihdere deposit, Biga Peninsula, NW Turkey  **Fatih Ozbas,**  Gulcan Bozkaya and David A Banks | | | |
| Fluid inclusion study in metamorphic veins from the Luarca sector (Asturias, northern Spain): role of fluid pressure in veining  **Jorge Pérez-Alonso**, Mercedes Fuertes-Fuente & Fernando Bastida | | | |
| Mineralizing Fluids of Two Stage Au Mineralization of Pionersky Ore Cluster, North-East Russia  **Vsevolod Yu. Prokofiev**, Alexandr V. Volkov, Evgeniya E. Tyukova | | | |
| Cyclic injection of metal-rich high-salinity magmatic fluids leading to the formation of the giant base metal deposit of Cerro de Pasco, Peru  **Bertrand Rottier**, Kalin Kouzmanov, Markus Wälle, Lluís Fontboté | | | |
| Preliminary Microthermometric Data of Hayriye, Iclaliye Mineralizations in (Inegöl-Bursa).  **Hüseyin Sendir**, Kadir Sarıiz, | | | |
| Fluid mixing and fault-valve action in the formation of the Nalunaq Gold deposit, Greenland.  **M.P. Smith**, D.A. Banks, F. Bowers | | | |
| Fluid inclusion studies constrain conditions of Cu mineralization in Cerro Colorado Mine, Northern Chile  Debbie P.W. Tsang, **Brian Tattitch** & Simon Wallis | | | |
| Methodology and Application of Evaporate Mound SEM-EDS analysis to Quantify the Solute Chemistry of Quartz-hosted Fluid Inclusions in a Mineralized Granitic Batholith  **Fergus Tweedale**, Jacob Hanley, Daniel Kontak, and Neil Rogers | | | |
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