

## Thermodynamics Workshop 18<sup>th</sup>-19<sup>th</sup> of January 2016 School of Earth and Environment, University of Leeds

### Monday

09:30-09:50 Tea and Coffee

09:50-10:00 Introduction – *Frances Wall / Stephen Stackhouse*

10:00-11:00 Background to Thermodynamics and Databases – *Bruce Yardley*

11:00-12:00 Hydrothermal experiments: transport and deposition of REE in hydrothermal systems – *Willy William-Jones*

12:00-12:40 Thermodynamic studies of rare earths in the Critical Materials Institute, a US DOE Hub – phosphogypsum, bastnaesite, and perovskite – *Alexandra Navrotsky*

12:40-13:00 General discussion

13:00-14:00 Lunch

14:00-14:30 Computational Overview – *Stephen Stackhouse*

14:30-15:30 Computational Studies of Hydrothermal Fluids – *David Sherman*

15:30-15:50 Experimental constraints on the solubility and speciation of HFSE and REE in high temperature fluids and the role of hydrothermal fluids in the genesis of rare metals deposits – *Marion Louvel*

15:50-16:10 Tea and Coffee

16:10-17:00 Breakout Groups

- back to basics catch up
- interdisciplinary review of what is already known

## Tuesday

09:00-10:00 Rare Earth Elements in Natural Systems – *Reto Gieré*

10:00-10:20 Rare Earth Recycling – *Andrew Masters*

10:20-10:40 Tea and Coffee

10:40-11:40 Thermodynamics of Extraction – *Animesh Jha*

11:40-12:40 Basics of Ionic Liquids for Minerals Processing – *Andy Abott*

12:40-13:00 Hydrochemistry and Process Simulation Based on  
Thermodynamic REE-data – *Harald Kalka*

13:00-14:00 Lunch

14:00-15:00 Breakout Groups:

- natural systems
- mineral processing

15:00-15:30 Concluding Discussion – opportunities for further work.

15:30 Close, Tea and Coffee

### **Travel and Accommodation Information.**

In regard to getting to Leeds, there is a useful guide here

[http://www.meetinleeds.com/getting\\_to\\_the\\_university.php](http://www.meetinleeds.com/getting_to_the_university.php)

Manchester airport is just as convenient as Leeds-Bradford, since there is a direct train to Leeds city centre. Flights are often cheaper.

In regard to hotels, you may want to look here

[http://accommodation.leeds.ac.uk/info/200128/staff\\_accommodation/39/hotels\\_and\\_bed\\_and\\_breakfasts](http://accommodation.leeds.ac.uk/info/200128/staff_accommodation/39/hotels_and_bed_and_breakfasts)

Note that, these are only the university-approved hotels, there are many more than this, to suite all tastes and budgets.

The workshop will be held in the seminars rooms at the School of Earth and Environment, at the University of Leeds

<http://www.leeds.ac.uk/campusmap>

The seminar rooms are located behind the reception desk of the main foyer, next to the entrance on the north side of the building.