Contribution ID: **240** Type: **invited talk**

CO2 capture - How can XAS help us?

Thursday, 19 September 2013 09:30 (30 minutes)

Owing to the increasing concentration of CO2 in the atmosphere and the climate change associated with it, there is increasing pressure to reduce the anthropogenic emissions of CO2. CO2 capture and storage (CCS) is a mid-term solution to mitigate climate change. However, the currently technologically available CO2 capture technique, i.e. amine scrubbing has very high, potentially prohibitively high CO2 capture costs. Thus, the development of more efficient CO2 capture processes is imperative. Recently, CO2 capture via the reversible carbonation/calcination reaction of CaO and the so-called chemical looping combustion process has been proposed. A cornerstone of these two processes is the development of novel CaO and transition metal based materials which possess, respectively, a high and stable CO2 uptake capacity and stable redox characteristics. In addition, to model the CO2 capture processes a better understanding of the underlying reaction mechanisms is required. In this talk we present our preliminary results using X-ray absorption spectroscopy to elucidate reaction pathways during material synthesis and repeated redox cycles.

Primary author: Prof. MÜLLER, Christoph (ETH Zürich)

Co-authors: Dr KIERZKOWSKA, Agnieszka (ETH Zurich); Prof. COPERET, Christophe (ETH Zurich); Dr BAUDOUIN, David (ETH Zurich); Mr IMTIAZ, Qasim (ETH Zürich); Dr PIN, Sonia (Paul Scherrer Institut); Mr KIM, Sung Min (ETH Zurich); Dr HUTHWELKER, Thomas (PSI)

Presenter: Prof. MÜLLER, Christoph (ETH Zürich)

Session Classification: Opportunities for Energy Research