

HIGHLIGHTS IN ENERGY RESEARCH03.10.2019, 16:00 - 17:00, EPFL Valais, 4th floor, ZEUIER room**From Weakness Comes Strength – ADORable zeolites and hemilabile MOFs*****Prof. Russell MORRIS****School of Chemistry, University of St Andrews, Scotland*Host : Prof. Berend Smit

We quite often here the phrase ‘That material isn’t any use because it isn’t stable!’ used as a way of pointing out a perceived weakness in a material, but what does it really mean? Of course, what we really want is that our material has the correct stability with respect to its environment so that it can complete its function. Materials that don’t have the ‘required’ stability are often then termed ‘useless’ (in the zeolite world we most often here this used in connection with lower thermal and hydrolytic stability that limits catalytic potential of the material). In this presentation I would like to explore how this perceived weakness in a material can in fact be turned into a positive feature. I will use examples taken from MOFs (a notoriously ‘unstable’ class of material) and show how understanding where weaker bonds are in the structure can lead to some unusual and intriguing effects, and open up new avenues of potential application. I will then explain how engineering weakness into zeolites can be used as a route to the preparation of new zeolite architectures using a process we describe using the ADOR acronym.



Bio: **Russell Morris** was born and raised in north Wales, and completed his education at the University of Oxford where he gained B.A. and D. Phil degrees. He is currently Bishop Wardlaw Professor of Chemistry at the University of St Andrews.

His research interests lie in the synthesis, characterisation and application of porous and layered materials including zeolites and metal-organic frameworks. He developed ionothermal synthesis – the use of ionic liquids as reactive media for the preparation of solids. This has had impact across a wide range of chemistry. His recent work on developing the ADOR approach to the preparation of zeolites offers routes to exciting materials that would not be possible using standard techniques. Morris also pioneered the use of porous materials for the storage and delivery of biologically active gases for medical applications and there are several start-up companies developing his technology to market.

He is an elected Fellow of the Royal Society (FRS), a Fellow of the Royal Society of Edinburgh (FRSE), and a Fellow of the Learned Society of Wales (FLSW). He is currently an associate editor for Dalton Transactions. He is the recipient of several awards including the Royal Society Brian Mercer Award for Innovation, The Baron Axel Cronstedt Prize from the European Federation of Zeolite Associations (2017) and the Royal Society of Chemistry Tilden Medal and Prize (2019).