EPFL Valais, ChE 602 Seminar, 24.11.2016

Title: Are MOFs the definitive materials for gas selective membranes?

Abstract:

Current polymer membrane materials applied for gas separation are not good enough to satisfy the permeability-selectivity requirements: there is a trade-off between both parameters that limits its application, even though gas separation membranes are much more energy efficient than other gas separation technologies. MOF (metal-organic framework) based membranes (both mixed matrix membranes and continuous membranes) could constitute the definitive separation systems to afford this challenge task. MOFs are porous crystalline organic/inorganic materials with pore apertures ranging from 0.3 nm to 1.7 nm, i.e. appropriate to produce molecular sieving and preferential adsorption effects, promoting the separation of, for instance, precombustion (H_2/CO_2) and postcombustion (CO_2/N_2) mixtures.

Bio:

Position: Full Professor (Chemical Engineering), Engineering and Architecture School, University of Zaragoza, Spain

• Education: 1990, B.Ss. in Chemistry; 1991, M.Ss in Chemistry; 1995, Ph.D. in Chemistry; U. Zaragoza, Spain

• Employment record: -March-August, 2005 Visiting professor, Chem. Eng. & Mater. Sci. Depart., University of Minnesota, USA

-2003-2010 Associate Professor, Engineering and Architecture School, University of Zaragoza, Spain

-July-August, 2002 Visiting professor, Chemistry Department, University of Aveiro, Portugal

-January-December, 1996 Visiting professor, Chemical Engineering Department, Univ. of Colorado, USA

-1996-2003 Assistant Professor, Faculty of Sciences & Eng. & Archit. School, University of Zaragoza, Spain

-May-December, 1995 Research postdoctoral stay, Institut de Recherches sur la Catalyse. C.N.R.S., France

-October 1991-April 1995 PhD student, Faculty of Sciences, University of Zaragoza, Spain

RESEARCH RECORD

Coauthor of more than 170 articles (Scopus ID 7004692070, h-index 39), 15 book chapters, 2 books, and 17 patents. See http://scholar.google.com/citations?user=FQIHD1wAAAAJ for a complete list of publications. 21 PhDs supervised.