

# ZERNIKE INSTITUTE COLLOQUIUM

Thursday, March 24th, 2011

16:00h, Lecture Hall: 5111.0080

Coffee and cakes from 15:30h

## Inorganic-Organic Framework Materials There's Plenty of Room in the Middle

**Anthony K. Cheetham**

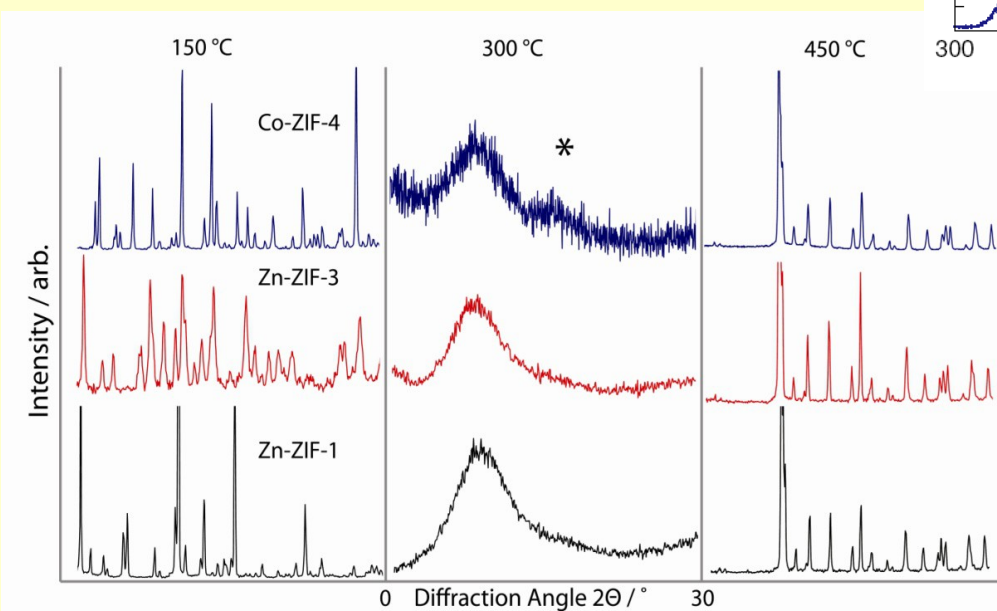
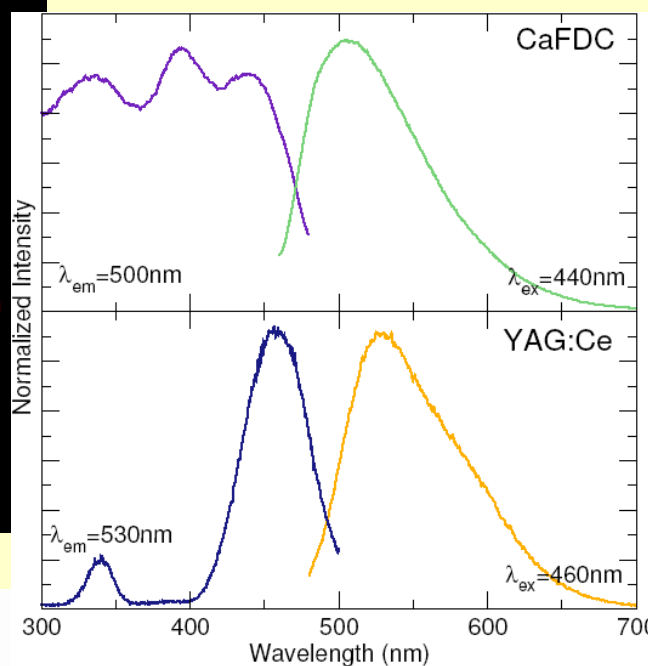
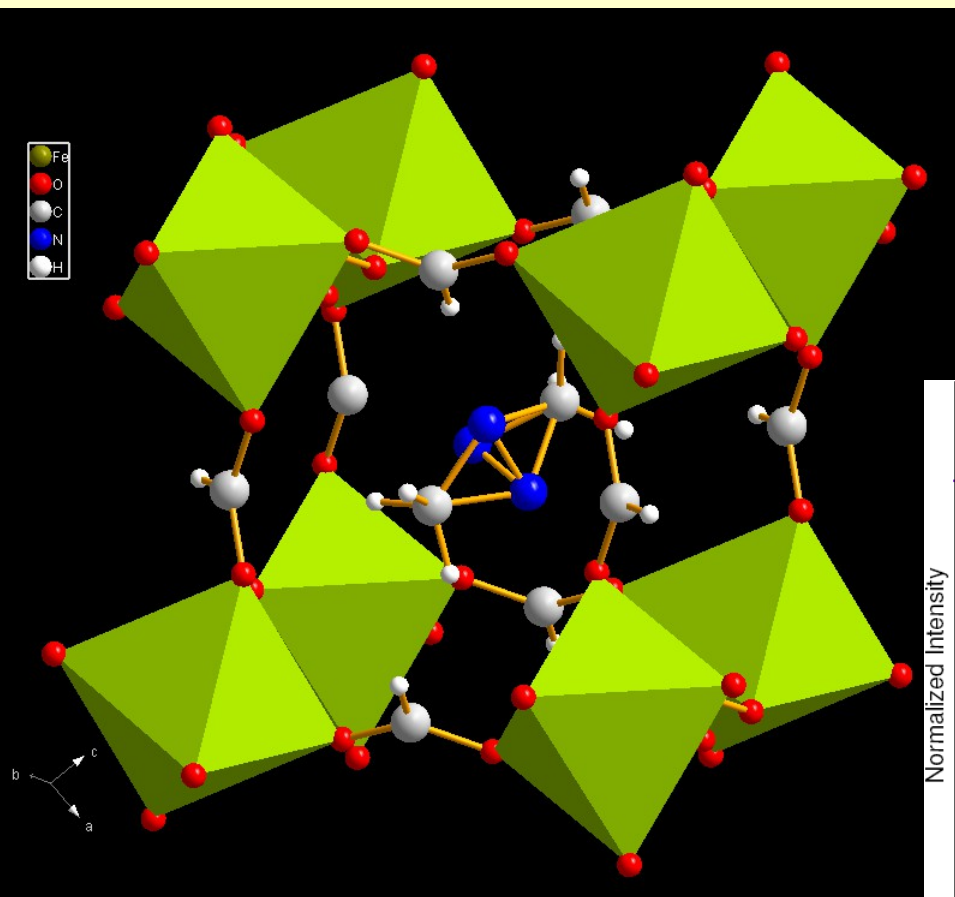
**Department of Materials Science and Metallurgy  
University of Cambridge  
Cambridge, UK**



The study of hybrid inorganic-organic frameworks is one of the most fashionable areas of materials science.

The presentation will focus on some aspects of our recent work on hybrid framework, including both nanoporous metal-organic frameworks (MOFs) and dense systems.

Recent work on the mechanical properties of MOFs,<sup>1</sup> their behaviour under pressure,<sup>2</sup> and amorphization<sup>3</sup> will be discussed. We shall also examine some of the potential applications of hybrid frameworks in areas such as hydrogen storage,<sup>4</sup> batteries,<sup>5</sup> magnetism,<sup>6</sup> photoluminescence,<sup>7</sup> and multiferroics.<sup>8</sup>



1. J. C. Tan, T. D. Bennett and A. K. Cheetham, *Proc. Natl. Acad. Sc. USA* 107, 9938 (2010)
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3. T. D. Bennett, A. L. Goodwin, M. T. Dove, D. A. Keen, M. G. Tucker, E. R. Barney, A. K. Soper, E. G. Bithell, J-C. Tan, A. K. Cheetham *Phys. Rev. Lett.* 104, 115503 (2010)
4. Z. Hulvey, D.A. Sava, J. Eckert, and A.K. Cheetham, *Inorg. Chem.* 50, 403 (2011)
5. H.H.-M. Yeung, M. Kosa, M. Parrinello, P.M. Forster, and A.K. Cheetham. *Cryst. Growth & Design*, 11, 221 (2011)
6. P. J. Saines, J. R. Hester, and A. K. Cheetham *Phys. Rev. B* 82, 144435 (2010)
7. J. D. Furman, A. Y. Warner, S. J. Teat, A. A. Mikhailovsky, and A. K. Cheetham, *Chem. Mater.* 22, 2255 (2010)
8. P. Jain, V. Ramachandran, R. J. Clark, H. D. Zhou, B. H. Toby, N. S. Dalal, H. W. Kroto, and A. K. Cheetham, *J. Amer. Chem. Soc.* 131, 13625 (2009)



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