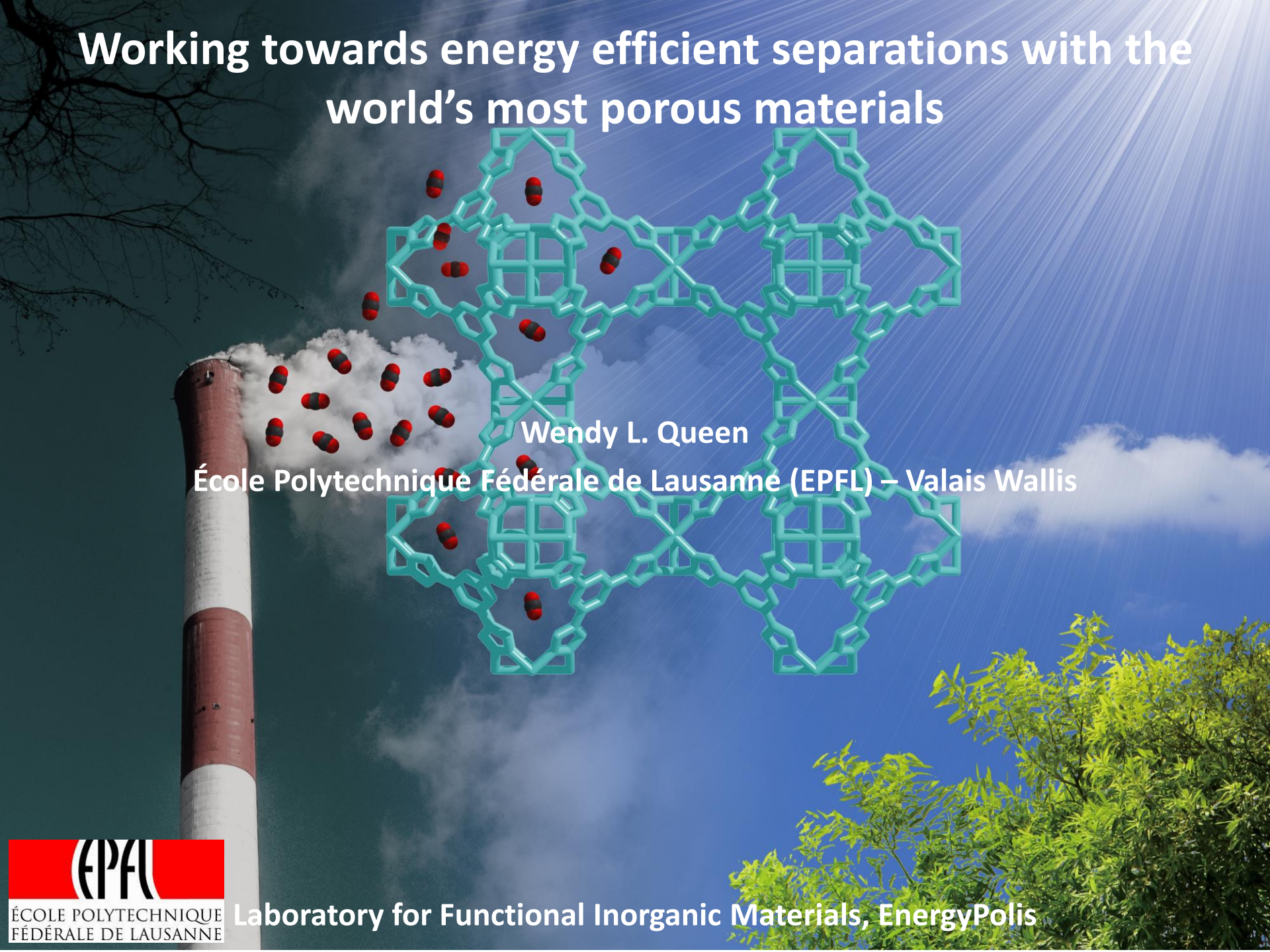
Working towards energy efficient separations with the world's most porous materials



Wendy L. Queen

École Polytechnique Fédérale de Lausanne (EPFL) – Valais Wallis

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Laboratory for Functional Inorganic Materials, EnergyPolis

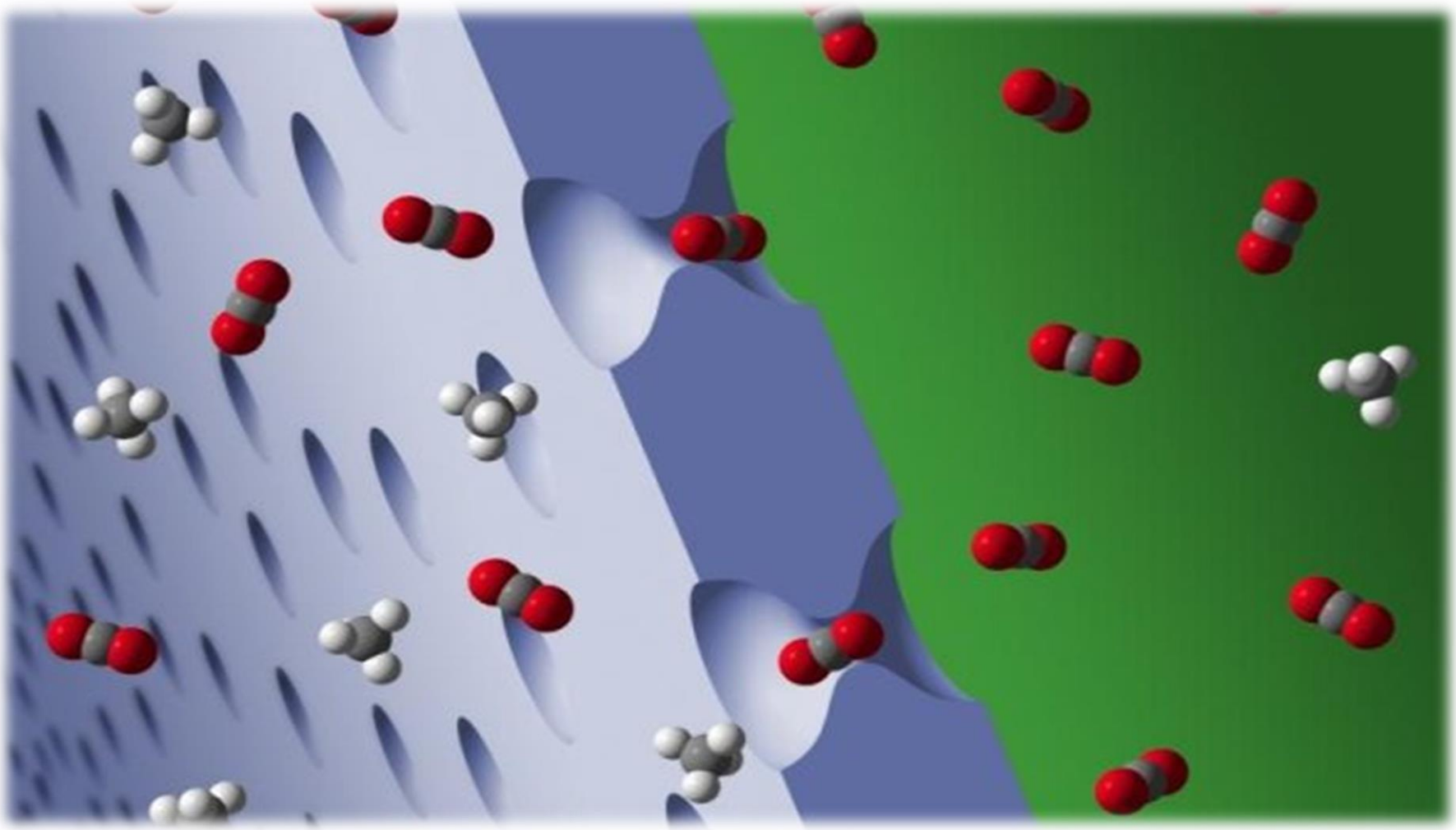
How much of the world's energy is spent on separations?

A) 1%
B) 5%
C) 15%
D) 40%

Global warming

How do we reduce CO_2 emissions?

✓ Improving energy efficiency of various processes



https://www.sciencedaily.com/releases/2007/10/071011142625.htm
Credit: Commonwealth Scientific and Industrial Research Organization (CSIRO), 10/2007

How do we reduce CO_2 emissions?

✓ Renewable, clean energy sources

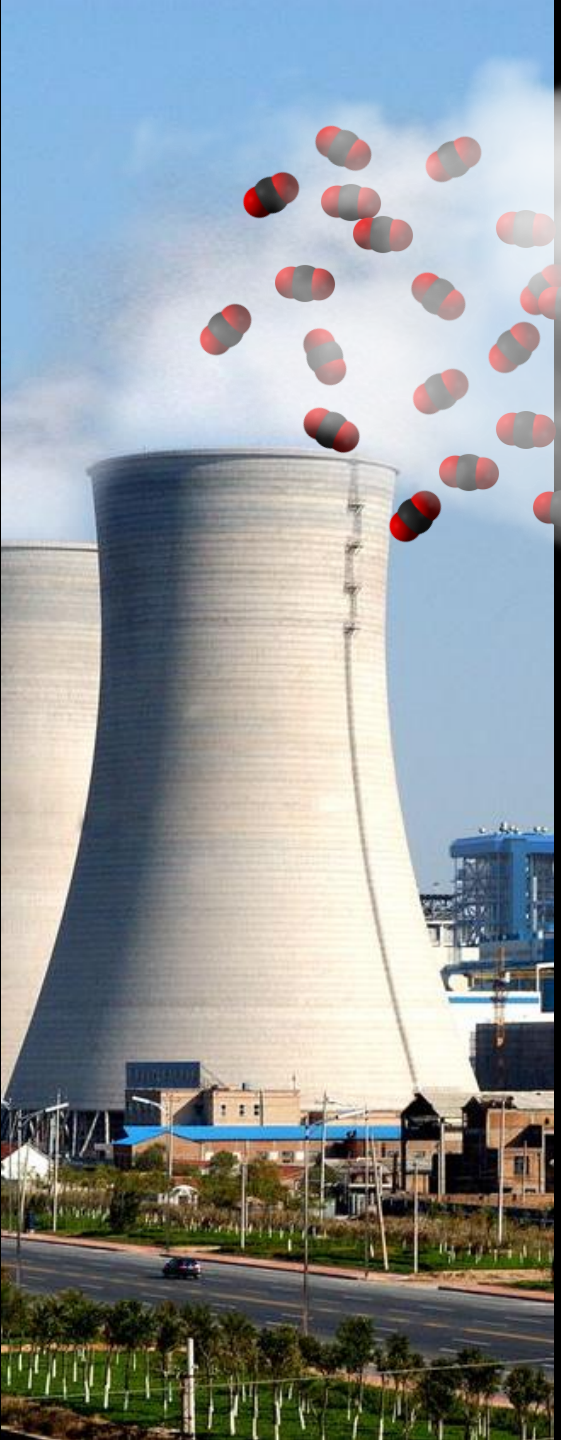
http://www.theenergycompany.co.uk/renewables-nuclear-fastest-growing-energy-source-2040/

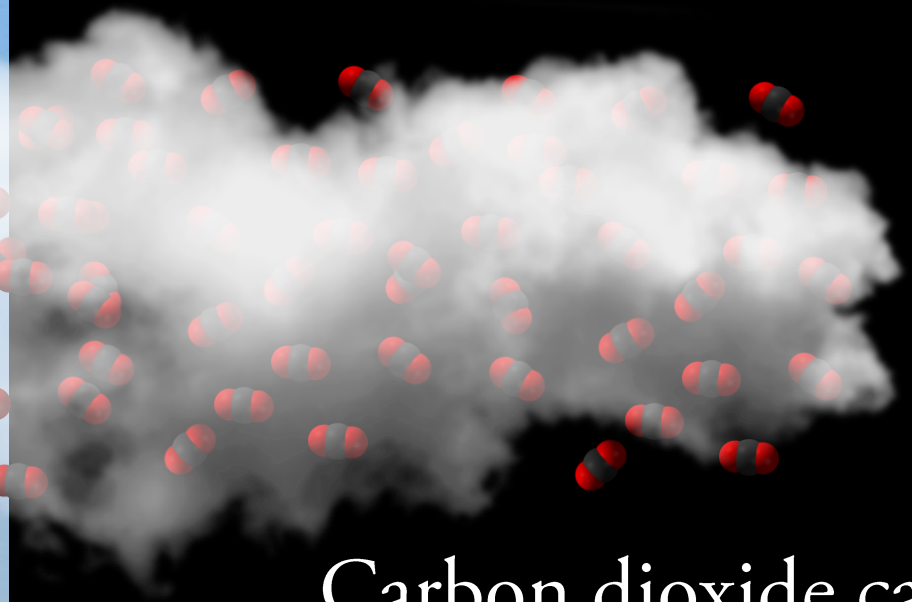
How do we reduce CO_2 emissions?

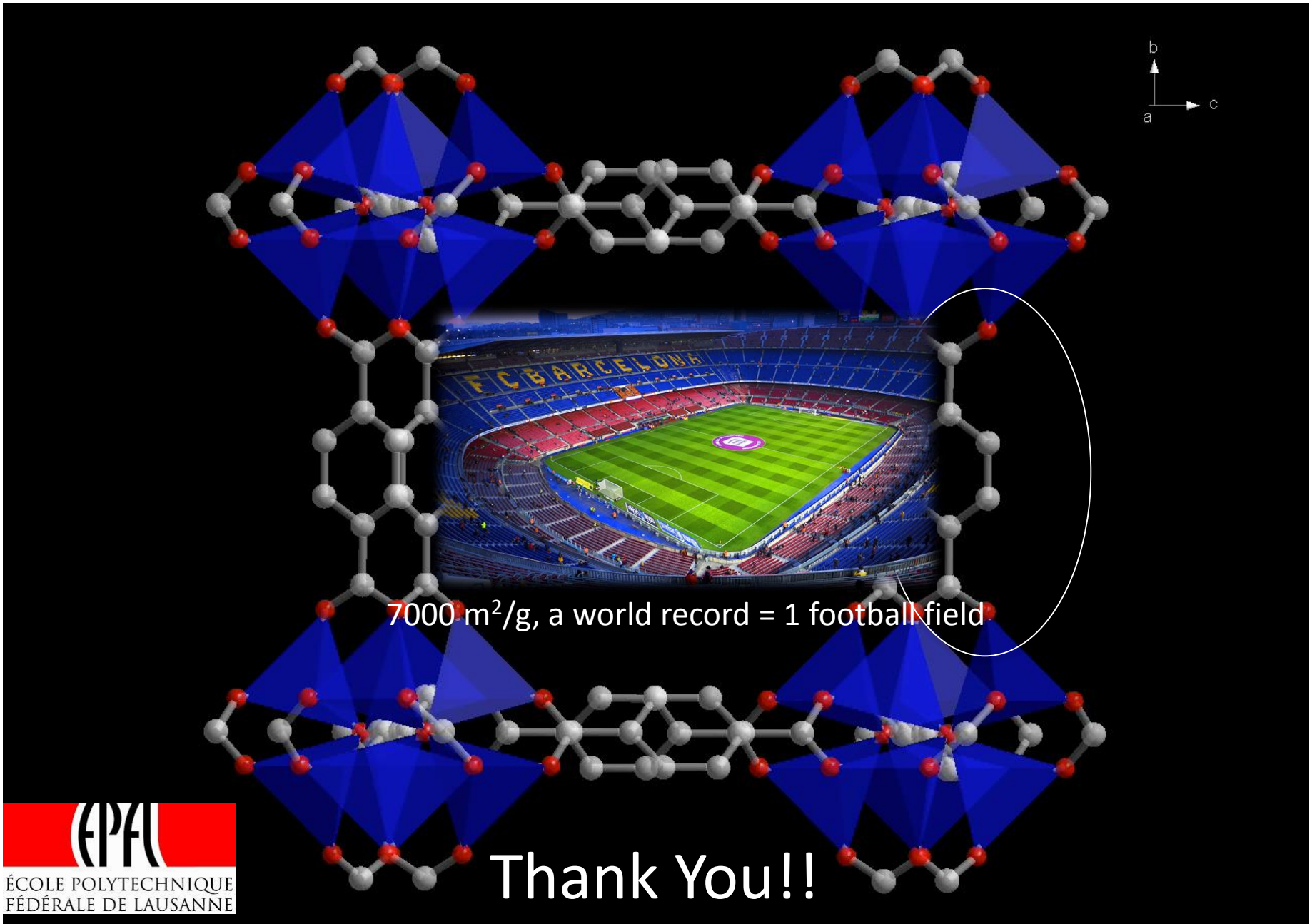
✓ Carbon capture

automobiles - 23%

electricity and heat - 42%





Carbon dioxide capture

Why are MOFs special?