Abstract

With the expected growth in energy consumption and the current trend towards a sustainable and renewable power system a number of challenges must be addressed including the production of power from alternative sources and the need for backup when solar and wind energy are not available. In this talk we present a multiscale optimization approach to evaluate the use of renewable resources towards the energy transition and the effect of considering social issues in the decision making. A number of examples presenting the design challenges of integrated facilities towards waste and power-to-chemicals-to-power including biomethane, methanol, ammonia, or metal hydrides and the possibilities in terms of wealth and job generation when coal or even nuclear plants are substituted by renewable based facilities to provide base load in the energy transition.

Bio

El Dr. Martín is Associate Professor of chemical engineering (already certified as full professor) at the University of Salamanca and leader of the Sustainable processes and products lab. Graduated with honors in Chemical engineering, was awarded the Outstanding thesis price in 2008. He joined P&G where he led the last challenge in the laundry business for which he obtained the P&G award for its outstanding contribution to modelling and simulation. He was a Fulbright Scholar under Prof. Ignacio E. Grossmann at CMU before accepting the challenge of building a process laboratory in the oldest university in Spain (est. 1218). El prof. Martín was named “Next Generation in Chemical Engineering” by Imperial College London in 2016 and has been included within the 1% top researchers in Chemical engineering by Stanford university Ranking, he has authored 163 papers in peer reviewed journals (h=37 SCOPUS), 50 book chapters, 2 monographic books and 6 textbooks for Elsevier, Springer in CRC Press. He is editor of journals such as LAAR, PIOS, Sustainability, Int. J. Green energy.