

Advances in thermo-chemical biomass conversion for overcoming barriers in the production of bioheat, bioelectricity and biofuels



Andrés Anca-Couce received his PhD from TU Berlin in 2012 and is since 2016 the leader of the “Sustainable, clean and bioenergy systems” group at TU Graz ([Bioenergy TU Graz](#)). The group conducts experimental and numerical research on thermo-chemical biomass conversion and its integration into renewable bioenergy and biorefinery concepts. Investigations are focused on the development of several processes based on combustion, gasification and pyrolysis of biomass for the production of bioheat, bioelectricity, biofuels and biochemicals. This is conducted in a close cooperation with several biomass plants developers as well as other scientific partners and the Austrian competence centre BEST Bioenergy. It is being addressed the characterization, conditioning and utilization of the products of thermo-chemical conversion, including the producer gas of gasification, char, ashes, tars or flue gases; as well as the reduction in emissions of air pollutants, which damage our health and the environment. Besides, the advances in thermo-chemical biomass conversion processes are supported with the development and application of multi-scale models, considering the molecular, particle and reactor level. The modelling approach includes the development and reduction of reaction mechanisms, as the detailed RAC scheme for biomass pyrolysis, together with a CFD modelling of the conversion plants. The work of Andrés Anca-Couce and colleagues has been presented in 35 papers published in high-quality peer-reviewed JCR journals (mainly Q1) since 2012, with over 1000 citations and a h-index of 15.