

Showcasing research from Professor Günther Rupprechter's laboratory, Institute of Materials Chemistry, TU Wien, Vienna, Austria.

Bimetallic CuPd nanoparticles supported on ZnO or graphene for  ${\rm CO_2}$  and CO conversion to methane and methanol

Our work investigates the hydrogenation of  $\mathrm{CO}_2$  and  $\mathrm{CO}$  to  $\mathrm{CH}_4$  and MeOH to reduce emissions and reliance on fossil fuels. It evaluates  $\mathrm{Cu}$ ,  $\mathrm{Pd}$ , and  $\mathrm{CuPd}$  nanoparticles on ZnO or graphene as catalysts under different operating conditions, demonstrating that lower  $\mathrm{Cu/Pd}$  loadings favor  $\mathrm{CH}_4$  production, while higher  $\mathrm{Cu}$  content boosts MeOH yield, offering valuable insights for sustainable fuel catalyst design.



