

Fueling our future

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The efficient and safe decomposition of formic acid as a promising energy carrier has become increasingly important. We have developed ruthenium based catalysts containing unique ligands for the selective decomposition of formic acid to H₂ and CO₂ in water in the absence of any organic additives. A turnover frequency (TOF) up to 12,000 h⁻¹ and a turnover number (TON) of 350,000~1,100,000 at 90 °C were achieved. Efficient production of high-pressure gas of 24.0 MPa (3480 psi) without the formation of CO, was demonstrated. A prototype model car was built.

Biography:

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Kuo-Wei Huang obtained his B.S. from National Taiwan University as a Dr. Yuan T. Lee Fellow and his Ph.D. from Stanford University as a Regina Casper Fellow. He is currently Associate Professor of Chemical Sciences at KAUST. Prior to joining KAUST, he was Assistant Professor at the National University of Singapore and a Goldhaber Distinguished Fellow at Brookhaven National Laboratory. He has co-authored over 170 publications with an H-Index of 37. His research interests include renewable energy and synthetic and mechanistic studies of small-molecule activation.