



Department: School of Resources and Environmental Engineering
Professional field: Multi-media environmental pollution control
and resource recovery
E-mail: cctian2@ecust.edu.cn

Profile

Dr. Chengcheng Tian, research fellow of School of Resources and Environmental Engineering ECUST. She is a “Eastern Scholar” professor awarded by Shanghai Municipal Education Commission in 2019. Dr. Tian graduated from ECUST in 2015 in industrial catalysis. Then she spent four years in Oka Ridge National Lab (USA) and University of Tennessee, Knoxville for her postdoc training under the guidance of Dr. Sheng Dai, who is a corporate fellow of USA national lab. Dr. Tian’s research interest is mainly centered at the control and elimination of environmental pollutions and their reuses, for example the capture and application of carbon dioxide from flue gas and the removal of VOCs and organic pollution using either physical or chemical catalytic approaches. During her PhD and postdoc periods, Dr. Tian has developed a series of novel porous adsorbents and catalysts with excellent separation and catalytic performances, providing new solutions towards environmental pollutions concerns. Thus far, Dr. Tian has filled an American patent and published 39 SCI research articles in many important environmental and material journals, like J. Am. Chem. Soc., Angew. Chem. Int. Ed., Adv. Mater., Appl. Catal. B, ACS Catal., and Chem. Sci., with total citations over 1000 times and an h-index of 19.

Research Field

1. Rational design and synthesis of novel functional porous materials for the capture of gas and liquid pollutants, such as carbon dioxide and organic pollutants in wasted water;
2. Designed synthesis nano-heterogeneous metal catalysts, such as single atoms, supported metal nanoclusters and nanoparticles, for catalytic degradation and conversion of pollutants.

Research results and selected published papers

1. Tian C.C., Zhang H.Y., Zhu X., Lin B., Liu X.F., Chen H., Zhang Y.F., Mullins D.R., Abney C.W., Shakouri M., Chernikov R., Hu Y.F., Polo-Garzon F., Wu Z.L., Fung V., Jiang D., Liu X.M., Chi M.F., Liu J.Y. and Dai S. A new trick for an old support: Stabilizing gold single atom on LaFeO₃ perovskite. Appl. Catal. B, 2020, 261, 118178.
2. Zhu X., Hua, Y. Y., Tian C.C.*, Abney C.W., Zhang P., Liu G.P., Jin T., Browning K. L., Jin W.Q., Dai S. Accelerating Membrane-based CO₂ Separation by Soluble Nanoporous Polymer Networks Produced Via Mechanochemical Oxidative Coupling. Angew. Chem. Int. Ed., 2018, 57, 2816.
3. Tian C.C., Zhu X., Abney C.W., Liu X.F., Foo G.S., Wu Z.L., Li M.J., Mahurin S.M., Yang S.Z., Liu J.Y. and Dai S. Towards the Design of a Hierarchical Perovskite Support: Ultra Sintering-Resistant Gold Nanocatalysts for CO Oxidation. ACS Catal. 2017, 7, 3388.
4. Zhu X., Tian C.C.,* Veith G.M., Abney C.W., Dehaut J., Dai S. An In situ Doping Strategy for the Preparation of Conjugated Triazine Frameworks Displaying Efficient CO₂ Capture Performance. J. Am. Chem. Soc., 2016, 138, 11497.
5. Tian C.C., Zhu X., Chai S.-H., Wu Z., Binder A., Brown S., Li L., Guo Y., Dai S. Three-phase catalytic system: water-hydrophobic ionic liquid-nanostructured VOPO₄-SiO₂ solid acid for efficient 5-hydroxymethylfurfural production. ChemSusChem, 2014, 7, 1703.
6. Tian C.C., Chai S.H., Zhu X., Wu Z.L., Binder A., Bauer J.C., Brown S., Chi M.F., Veith G.M., Guo Y.L., Dai S. In situ growth synthesis of heterostructured LnPO₄-SiO₂ (Ln = La, Ce, and Eu) mesoporous materials as supports for small gold particles used in catalytic CO oxidation. J. Mater. Chem., 2012, 48, 25227.