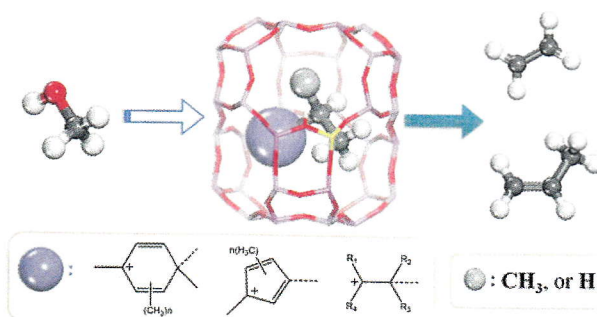


Chemistry Author Up Close

381 Understanding Zeolites Catalyzed Methanol-to-Olefins Conversion from Theoretical Calculations

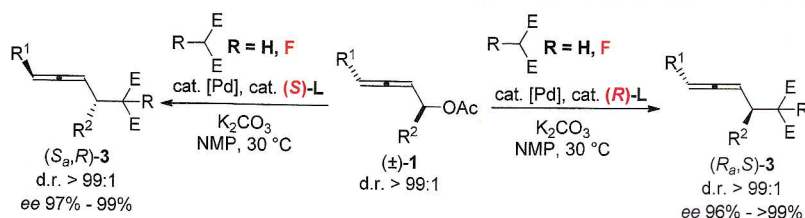


This personal account summarizes the work of Xie group on the understanding of the hydrocarbon pool mechanism for the MTO conversion from theoretical calculations.

Chuanming Wang, Yangdong Wang, Zaiku Xie*

Breaking Report

387 Catalytic Enantioselective Simultaneous Control of Axial Chirality and Central Chirality in Allenes

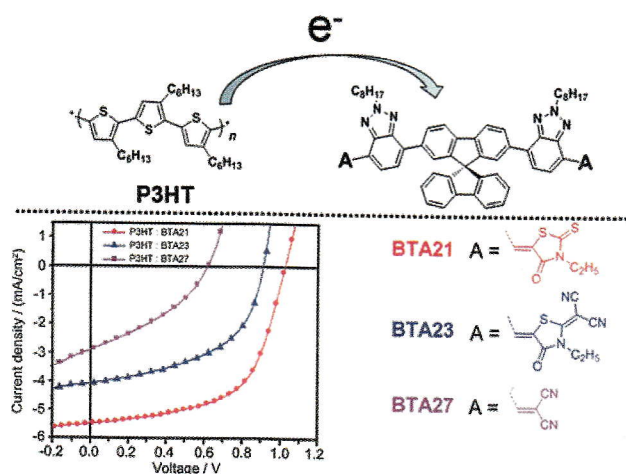


A protocol for preparation of chiral allenes with both central and axial chiralities via a catalytic asymmetric allenylation of different biologically or synthetically useful fluorinated or non-fluorinated nucleophiles with one pair of diastereomer of racemic allenylic acetates by using a single chiral ligand was developed.

Jianxin Dai, Xinyu Duan, Jing Zhou, Chunling Fu, Shengming Ma*

Comprehensive Reports

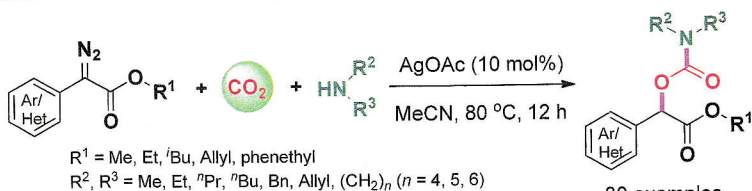
392 Wide Band Gap Non-Fullerene Small Molecular Acceptors Containing Spirobifluorene and Benzotriazole with Three Different End-Capped Groups for P3HT-Based Organic Solar Cells



With P3HT as donor, three spirobifluorene-benzotriazole based non-fullerene small molecule acceptors display largely different photovoltaic performances strongly depending on the substituted terminal acceptor units.

Xiaoyu Wen, Bo Xiao, Ailing Tang, Junyi Hu, Chunhe Yang,* Erjun Zhou*

Concise Reports

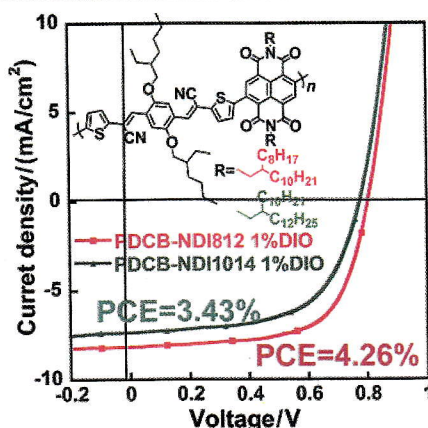
399
Silver-Catalyzed Three-Component Coupling of Carbon Dioxide, Amines and α -Diazoesters

- ✓ Readily available reagents and catalyst
- ✓ Good atom economy
- ✓ High functional group tolerance

30 examples
up to 82% yield

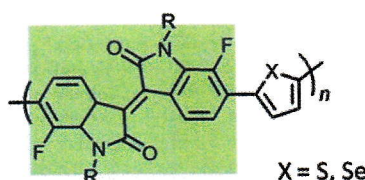
A silver-catalyzed three-component coupling reaction between carbon dioxide, amines and α -diazoesters has been developed for the first time. The novel reaction provides a facile and efficient method for the synthesis of a wide range of new α -carbamoyloxy esters, which are difficult to access by existing methods.

Chaorong Qi,* Donghao Yan, Wenfang Xiong, Huanfeng Jiang*

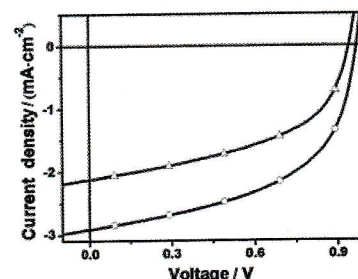
406
n-Type Conjugated Polymer Based on Dicyanodistyrylbenzene and Naphthalene Diimide Units for All-Polymer Solar Cells

A novel n-type conjugated polymer based on dicyanodistyrylbenzene and naphthalene diimide units for all-PSCs could achieve an enhanced PCE of 4.26%.

Baitian He, Qingwu Yin, Jie Zhang,* Tao Jia, Xiye Yang, Xiao-Fang Jiang, Fei Huang,* Yong Cao

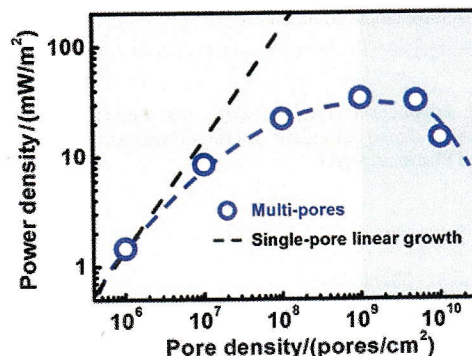
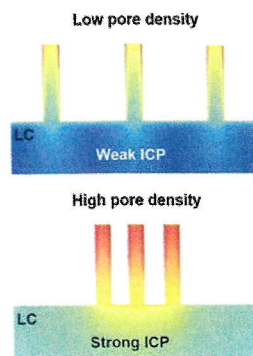
411
Polymer Electron Acceptors Based on Fluorinated Isoindigo Unit for Polymer Solar Cells

Polymer electron acceptors based on F-IID as the electron-deficient building block



A new kind of polymer electron acceptors based on fluorinated isoindigo (F-IID) as the electron-deficient building block has been developed. The resulting polymers based on F-IID show low-lying LUMO/HOMO energy levels, high electron mobilities and broad absorption spectra, enabling applications as electron acceptors in polymer solar cells.

Junhui Miao, Han Xu, Bin Meng,* Jun Liu,* Lixiang Wang

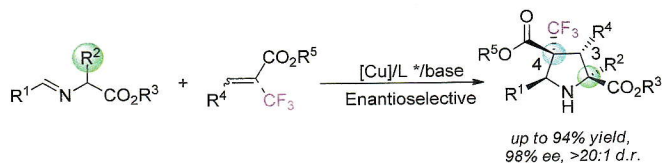
417
Anomalous Pore-Density Dependence in Nano-fluidic Osmotic Power Generation

Over-crowded nanopore arrangement impairs charge selectivity and induces strong ion concentration polarization (ICP) that undermines the osmotic energy conversion, showing anomalous pore-density dependence.

Jianjian Su, Danyan Ji, Jialiang Tang, Hao Li, Yaping Feng, Liuxuan Cao,* Lei Jiang, Wei Guo

421

Copper(I)-Catalyzed Asymmetric [3+2]-Cycloaddition of α -Substituted Iminoesters with α -Trifluoromethyl α,β -Unsaturated Esters



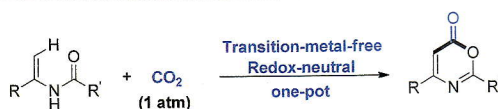
- ✓ Good yields, d.r., ees, etc. ✓ One CF₃ all-carbon quaternary stereocenter
- ✓ Four contiguous chiral stereocenters ✓ Two (aza)-quaternary stereocenters

A highly regio-, diastereo- and enantioselective Cu(I)-catalyzed intermolecular [3+2] cycloaddition reaction of α -substituted iminoesters with α -trifluoromethyl α,β -unsaturated esters was developed, which provided a facile access to pyrrolidines with two skipped (aza)quaternary stereocenters including a CF₃ all-carbon quaternary stereocenter.

Shan Xu, Bing Liu, Zhan-Ming Zhang, Bing Xu, Junliang Zhang

430

Lactonization of C(sp²)-H Bonds in Enamides with CO₂



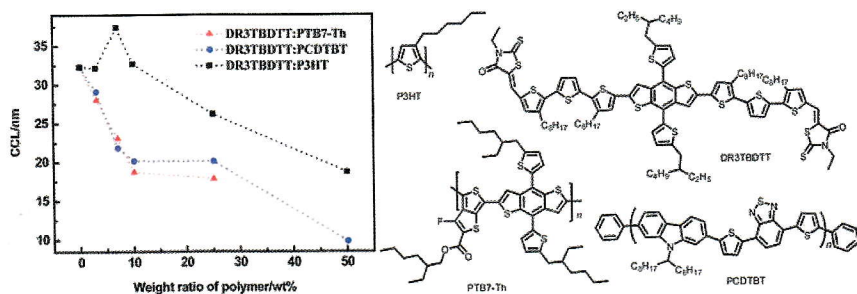
- + Easily available + User-friendly + Scalable + Important and Diverse
- + Broad substrate scope + Low pressure + Green + Easy derivation

In this paper, carbon dioxide is used directly as an ideal carbonyl source for the one-pot lactonization of enamides C(sp²)-H bonds to synthesize important 1,3-oxazin-6-ones. These transition metal-free and redox-neutral reactions feature a broad substrate scope, good functional group tolerance and facile product derivatization.

Zhen Zhang,* Chun-Jun Zhu, Meng Miao, Jie-Lian Han, Tao Ju, Lei Song, Jian-Heng Ye, Jing Li, Da-Gang Yu*

437

DR3TBDTT Based Ternary Blends Containing Conjugated Polymers: Crystallization Determines Morphology and Performance



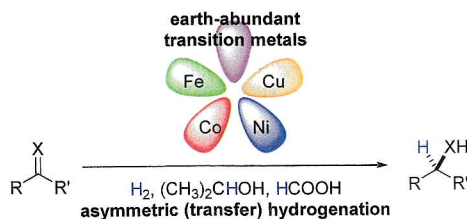
How the conjugated polymers affect the crystallization of DR3TBDTT, in addition to the corresponding morphology and performance, is not well understood. We introduced PTB7-Th, PCDTBT and P3HT to investigate the influence of crystallization. We found that despite of energy level alignment, the crystallization of DR3TBDTT influenced by polymers determines the corresponding morphology of active layers and photovoltaic performance.

Jingping Yin, Weihua Zhou,* Qingyun Ai, Xiangchuan Meng, Siqu Liu, Zoukangning Yu, Jianrong Zeng, Yiwang Chen*

Recent Advances

443

Asymmetric Transfer and Pressure Hydrogenation with Earth-Abundant Transition Metal Catalysts

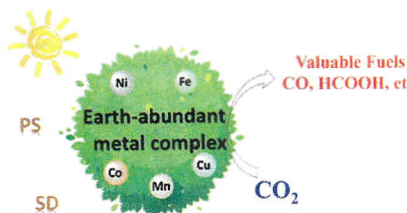


This review summarizes advances in the asymmetric transfer and pressure hydrogenation of ketones, imines and alkenes with earth-abundant transition metal catalysts.

Zhenfeng Zhang, Nicholas Andrew Butt, Muxing Zhou, Delong Liu, Wanbin Zhang

455

Recent Advances in Photocatalytic CO₂ Reduction Using Earth-Abundant Metal Complexes-Derived Photocatalysts



Earth-abundant metal complexes show promising applications in photocatalytic reduction of CO₂ with H₂O into energy-rich chemicals under visible light irradiation.

Yanfei Zhao, Zhimin Liu*

Meeting Our New International Advisory Board Members (page 461)

Meeting Our New Associate Editors (page 462)

Meeting Our New Members of Editorial Board of Rising Stars (pages 463–470)