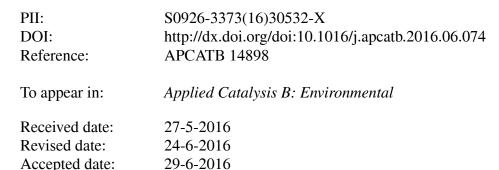
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Author: Guixia Zhao Hong Pang Guigao Liu Peng Li Huimin Liu Huabin Zhang Li Shi Jinhua Ye



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ACCEPTED MANUSCRIPT

<AT>Co-porphyrin/Carbon nitride hybrids for improved photocatalytic CO₂ reduction under visible light

<AU>Guixia Zhao^a, Hong Pang^{a,b}, Guigao Liu^{a,b}, Peng Li^a, Huimin Liu^a, Huabin Zhang^a, Li Shi^{a,b}, Jinhua Ye^{a,b,c,d*} ##Email##Jinhua.YE@nims.go.jp##/Email## <AU>

<AFF>^aInternational Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), 1-1 Namiki, Tsukuba, Ibaraki 305-0044, Japan <AFF>^bGraduate School of Chemical Science and Engineering, Hokkaido University, Sapporo 060-0814, Japan

<AFF>°TU-NIMS Joint Research Center, School of Materials Science and Engineering, Tianjin University, Tianjin 300072, PR China

<AFF>^dCollaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300072, PR China

^{<PA>*} Corresponding author.

<ABS-Head><ABS-HEAD>Graphical abstract

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<ABS-HEAD>Highlights A covalently linked Co-porphyrin/low-molecular-weight carbon nitride hybrids was prepared for the first time. ► The hybrids possessed improved photocatalytic activity compared with bulk carbon nitride and Co-porphyrin loaded C₃N₄ heterojunction system. ► The efficient electron transfer and trapping by the Co active sites as well as the affinity of Co-porphyrin for CO₂ are considered to account for the enhanced activity. ► Our findings may open a promising route to immobilize the active site into the light-harvest antenna for improved photocatalytic performance.

<ABS-HEAD>Abstract

<ABS-P>A covalently linked reaction center/antenna hybrid composed of Co-porphyrin and

low-molecular-weight carbon nitride was developed for the reduction of CO2 into CO under

visible light for the first time. The hybrids possessed thirteen-fold higher photocatalytic activity

(17 umol/g/h) compared with bulk carbon nitride, and it is more than twice what it was in the

Co-porphyrin loaded C₃N₄ heterojunction system. The efficient electron transfer and trapping by

the Co active sites as well as the affinity of Co-porphyrin for CO_2 are considered to account for

the enhanced activity. Our findings may open a promising route to modify carbon nitride and

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