Layered Nanojunctions for Hydrogen-revolution Catalysis
The H₂ production performance of mpg-CN under visible light is significantly improved by growing thin layers of MoS₂ on mpg-CN. The 0.5 wt% MoS₂/mpg-CN performs better than 0.5 wt% Pt/mpg-CN under identical reaction conditions. The geometric similarity in the layered structures of MoS₂ and g-CN, together with the mesoporous structure of mpg-CN facilitates the planar growth of MoS₂ over the mpg-CN surface and the formation of the thin, planar MoS₂/mpg-CN interface; these characteristics are believed to promote the photoactivity of MoS₂/mpg-CN. We found that other layered transition metal dichalcogenides such as WS₂ are also efficient promoters for hydrogen production over g-CN. Herein we have presented not only an example of a catalyst made of abundant C, N, Mo and S elements for efficient H₂ photosynthesis, but also a conceptual advance to rationally design and fabricate a thin, effective interfacial 2D junctions between co-catalysts and semiconductors that have similar layered geometric structures.

General information
State: Published
Organisations: Department of Physics, Center for Individual Nanoparticle Functionality, Fuzhou University
Pages: 3621-3625
Publication date: 2013
Peer-reviewed: Yes

Publication information
Volume: 52
Issue number: 13
ISSN (Print): 1433-7851
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 11.31 SJR 6.155 SNIP 2.165
Web of Science (2017): Impact factor 12.102
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 10.8 SJR 5.954 SNIP 2.146
Web of Science (2016): Impact factor 11.994
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 11.13 SJR 5.888 SNIP 2.225
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 10.84 SJR 5.811 SNIP 2.307
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 10.7 SJR 5.702 SNIP 2.198
Web of Science (2013): Impact factor 11.336
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 10.55 SJR 6.407 SNIP 2.329
Web of Science (2012): Impact factor 13.734
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 10.75 SJR 6.063 SNIP 2.361
Web of Science (2011): Impact factor 13.455
ISI indexed (2011): ISI indexed yes