

1. Record Nr.	UNINA9910616377803321
Autore	Jiao Xingchen
Titolo	Controllable preparation of two-dimensional metal sulfide/oxide for CO ₂ photoreduction // Xingchen Jiao
Pubbl/distr/stampa	Singapore : , : Springer, , [2022] ©2022
ISBN	9789811948886 9789811948879
Descrizione fisica	1 online resource (123 pages)
Collana	Springer Theses
Disciplina	628.532
Soggetti	Carbon dioxide mitigation - Technological innovations Photocatalysis - Materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Supervisor's Foreword -- Preface -- Acknowledgments -- Contents -- 1 Introduction -- 1.1 Background -- 1.2 Recent Advances in Structure of Ultrathin Two-Dimensional Nanomaterials -- 1.2.1 Composition of Ultrathin Two-Dimensional Nanomaterials -- 1.2.2 Synthesis and Characterization of Ultrathin Two-Dimensional Nanomaterials -- 1.2.3 Structural Regulation of Ultrathin Two-Dimensional Nanomaterials -- 1.3 Recent Advances in Photocatalysis of Ultrathin Two-Dimensional Nanomaterials -- 1.3.1 Two-Dimensional Metal Oxide Nanosheets -- 1.3.2 Two-Dimensional Metal Sulfide Nanosheets -- 1.3.3 Other Two-Dimensional Nanosheets -- 1.4 Recent Advances in CO ₂ Photoreduction -- 1.4.1 Fundamental Principles of CO ₂ Photoreduction -- 1.4.2 Study for Property of CO ₂ Photoreduction -- 1.4.3 Study on Reaction Mechanism for CO ₂ Photoreduction -- 1.5 Background and Research Content of This Thesis -- References -- 2 Defective Ultrathin ZnIn ₂ S ₄ Nanosheets Boosting CO ₂ Photoreduction Property -- 2.1 Motivation -- 2.2 Experimental Part -- 2.2.1 Samples Preparation -- 2.2.2 Characterizations -- 2.2.3 CO ₂ Photoreduction Measurement -- 2.2.4 Surface Photovoltage Measurements -- 2.2.5 Positron Annihilation Measurement -- 2.2.6 Density Functional Theory Calculation Details -- 2.3 Results and Discussion -- 2.3.1 Characterization of the Defective ZnIn ₂ S ₄

Nanosheets -- 2.3.2 Study of CO₂ Photoreduction Property -- 2.3.3
First Principles Calculation -- 2.4 Conclusion -- References -- 3
Partially Oxidized Ultrathin SnS₂ Nanosheets Realizing High-Efficiency
CO₂ Photoreduction Performance -- 3.1 Motivation -- 3.2
Experimental Part -- 3.2.1 Samples Preparation -- 3.2.2
Characterizations -- 3.2.3 CO₂ Photoreduction Measurement -- 3.2.4
DFT Calculation Details -- 3.3 Results and Discussion.
3.3.1 Characterization of Partially Oxidized SnS₂ Nanosheets
and Pristine SnS₂ Nanosheets -- 3.3.2 Study of CO₂ Photoreduction
Property -- 3.3.3 Mechanism Explanation and First Principles
Calculation -- 3.4 Conclusion -- References -- 4 Cation Doped
Ultrathin Nb₂O₅ Nanosheets Regulating Product Selectivity of CO₂
Photoreduction -- 4.1 Motivation -- 4.2 Experimental Part -- 4.2.1
Samples Preparation -- 4.2.2 Characterizations -- 4.2.3 CO₂
Photoreduction Measurement -- 4.2.4 DFT Calculation Details -- 4.3
Results and Discussion -- 4.3.1 Characterization of Nb⁴⁺ Doped
Nb₂O₅ Nanosheets and Nb₂O₅ Nanosheets -- 4.3.2 Study of CO₂
Photoreduction Property -- 4.3.3 Mechanism Explanation and First
Principles Calculation -- 4.4 Conclusion -- References -- 5 Summary
and Outlook -- 5.1 Full Text Summary -- 5.2 Outlook.
