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Name: **Yong** Surname: **Xie**

Birthdate: **15/11/1984** Birthplace: **Shandong (China)**

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Academic degrees:

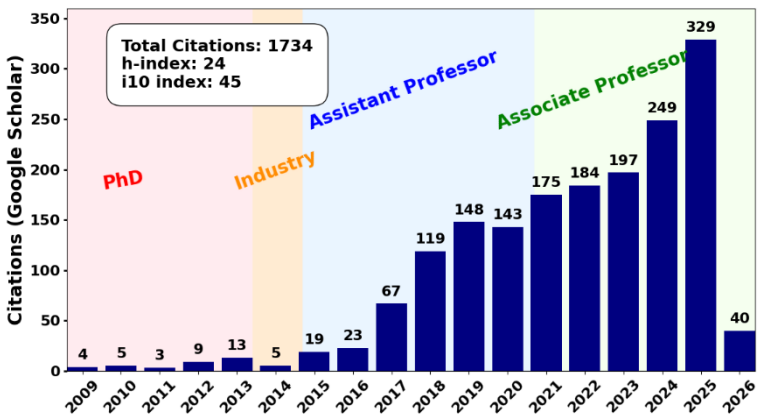
2006/2013	Ph.D. in Materials Science. Northwestern Polytechnical University (NPU)/China.
2007/2010	Joint Ph.D. training. Institute of Semiconductor Physics of Ulm University/Germany.
2002/2006	Bachelor's Degree. Northwestern Polytechnical University (NPU)/China.

Scientific positions:

Jul 2021/ present	*Visiting Professor (Associated doctor) Instituto de Ciencia de los Materiales de Madrid, Spain.
Jul 2020 / present	Associate Professor. School of Advanced Materials and Nanotechnology, Xidian University (Xi'an, China).
Jul 2014 / Jun 2020	Assistant Professor / Lecturer. School of Advanced Materials and Nanotechnology, Xidian University (Xi'an, XDU China).
Nov 2017 / Nov 2019	Postdoctoral Researcher. Electrical Engineering and Computer Science, Case Western Reserve University (Cleveland, USA).
Apr 2013 / Jun 2014	MEMS Engineer / Project Manager. Xi'an Flight Automatic Control Research Institute (Xi'an, China)

Summary of scientific production and achievements:

Publications: (sources ISI WOS and Google Scholar, date Jan. 2026)



Total Citations (Source):
1734 (Google Scholar, date Jan. 2026)
1273 (ISI WOS, date Jan. 2026)

h-index:
24 (Google Scholar)
21 (ISI WOS)

i10 index:
45 (Google Scholar)

Selected 5 publications within academic career: (sources ISI WOS and Google Scholar, date Jan. 2026)

1 **Identification and structural characterization of twisted atomically thin bilayer materials by deep learning.** H. Yang, R. Hu, H. Wu, X. He, Y. Zhou*, Y. Xue, K. He, W. Hu, H. Chen, M. Gong, X. Zhang, P.-H. Tan*, E. R. Hernández*, **Y. Xie***. Nano Letters, 24(9), 2789–2797 (2024). DOI: 10.1021/acs.nanolett.3c04815. Citations (GS): 18. Citations (WOS): 15.

2 **Toward full autonomous laboratory instrumentation control with large language models. Yong Xie*,** Kexin He, Andres Castellanos-Gomez***,** Small Structures, 2500173 (2025). DOI: 10.1002/sstr.202500173. Citations (GS): 6.

3 **Building an affordable self-driving lab: Practical machine learning experiments for physics education using Internet-of-Things.** Yang Liu, Qianjie Lei, Xiaolong He, Yizhe Xue, Kexin He, Haitao Yang, Yong Wang, Xian Zhang, Li Yang, Yichun Zhou*, Ruiqi Hu, **Yong Xie*,** APL Machine Learning, 3 (4) 046105 (2025) doi: 10.1063/5.0283529 Citations (GS): 1.

4 **Low-symmetry 2D *t*-InTe for polarization-sensitive UV-Vis-NIR photodetection.** N. Zhou, Z. Dang, H. Li, Z. Sun, S. Deng, J. Li, X. Li, X. Bai, **Y. Xie***, L. Li, T. Zhai*. Small, 20(40), 2400311 (2024). DOI: 10.1002/smll.202400311. Citations (GS): 10. Citations (WOS): 9.

5 **Laser trimming for lithography-free fabrications of MoS_2 devices. Y. Xie***, O. Çakıroğlu, W. Hu, K. He, S. Puebla, T. Pucher, Q. Zhao, X. Ma, A. Castellanos-Gomez*. Nano Research, 16(4), 5042–5046 (2023). DOI: 10.1007/s12274-022-5241-2. Citations (GS): 10. Citations (WOS): 8.

Talks:

Invited oral contributions: 5	*Invited scientific seminars*: 6
oral contributions: 5	*organization of conference:* 1

Patents:

Ten (10) Chinese patents granted, of which two (2) have been licensed

Academic awards and recognitions:

2026	First place (tie) in the Web Agent track of the UC Berkeley RDI AgentX–AgentBeats competition (Top 1%)
2015	Excellent Doctoral Dissertation Award of Shaanxi Province (Top 5%)
2015	Excellent Doctoral Dissertation Award of Northwestern Polytechnical University (NPU)

Fellowships and research grants (as Principal Investigator):

2024 - 2026	State Key Laboratory of Infrared Physics, 200 kRMB (~25 k€) success rate ~50%
2023	Fundamental Research Funds for the Central Universities, 60 kRMB (~7.5 k€)
2021 - 2022	Fundamental Research Funds for the Central Universities, 60 kRMB (~7.5 k€)
2020 - 2023	National Natural Science Foundation of China (NSFC, International Cooperation) - European Research Council (ERC), 30 kRMB (~3.75 k€) success rate ~50%
2020 - 2023	Shaanxi Key Research and Development Program, 50 kRMB (~6.25 k€) success rate ~30%
2017 - 2021	National Natural Science Foundation of China, 300 kRMB (~37.5 k€) success rate ~30%
2018 - 2020	National Natural Science Foundation of China, 240 kRMB (~30 k€) success rate ~26%
2017 - 2018	Shaanxi Natural Science Program, 50 kRMB (~6.25 k€) success rate ~30%
2016 - 2018	State Key Laboratory Program, 60 kRMB (~7.5 k€) success rate ~15%
2015 - 2017	Fundamental Research Funds for the Central Universities, 60 kRMB (~7.5 k€)

Narrative CV summary

I am a materials scientist specializing in two-dimensional semiconductors and nanoelectronic/optoelectronic devices, with a growing focus on integrating artificial intelligence into materials research. My current work centers on the synthesis, strain engineering, and artificial intelligence (AI)-assisted characterization and applications of two-dimensional (2D) materials and heterostructures.

I received joint Ph.D. training at the University of Ulm (Germany) and Northwestern Polytechnical University (China), where I initiated independent research on ZnO-based wide-bandgap semiconductors, focusing on epitaxial growth, optical spectroscopy, and photodetector applications. I co-authored 11 peer-reviewed publications (6 as first author) and co-supervised three MSc students during my Ph.D. training. My dissertation received the Excellent Doctoral Dissertation Award of Shaanxi Province (top 5%).

After earning my Ph.D. in 2013, I joined the Xi'an Flight Automatic Control Research Institute (FACRI) as a micro-electromechanical systems (MEMS) engineer and project coordinator for a collaboration with Fraunhofer Institute for Electronic Nano Systems. This work led to mass production of MEMS gyroscopes and laid the technological foundation for my later research on MEMS-based strain engineering of 2D materials.

Since 2014, I have been affiliated with Xidian University, where I was appointed Associate Professor in 2020. From 2017 to 2019, I conducted postdoctoral research at Case Western Reserve University (USA), working on nanoscale strain engineering and AI-integrated optoelectronic device platforms. I also mentored a PhD student and initiated collaborations that continue to this day.

Since 2021, I have served as a visiting professor at ICMM–CSIC, entering the ERC framework through a National Natural Science Foundation of China (NSFC)–ERC collaborative agreement. I contributed to ERC-funded projects on two-dimensional semiconductors, including the ERC Starting Grant 2D-TOPSENSE and the ERC Proof-of-Concept StEnSo, co-authoring 18 peer-reviewed publications. I am currently a collaborator on the ERC Synergy Grant SKIN2DTRONICS (2025–2031), working on conformable two-dimensional electronic devices and co-supervising PhD students at ICMM–CSIC.

To date, I have authored 75 peer-reviewed publications (15 first-author, 22 last/corresponding-author) in journals such as *Nano Letters*, *Small*, *Nano Research*, and *Applied Physics Letters*. I have led 10 funded projects as Principal Investigator. I supervised 22 undergraduate projects (20 completed), 14 MSc theses (11 completed), and 2 Ph.D. students (1 graduated). I hold 10 granted patents, 2 of which were licensed to industry as part of a technology package (60 patents in total) for 3.7 million euros. I serve on the editorial board of *Scientific Reports* and *Materials Futures* (IOP), where I was recognized with a Special Recognition Award in 2023.

Table of contents

FULL RESUME

Publications:

75. Strain control of the electronic structure in WS_2 homobilayers with 0° and 60° stacking angles
Jadriško, Valentino; Landa-Garcia, Irantzu; Novko, Dino; Radatović, Borna; Lei, Qianjie; Vujičić, Nataša; Gadermaier, Christoph; Castellanos-Gomez, Andrés; **Xie, Yong** (author position: 9/9)
Nanoscale, 2026. Citations: 0
DOI: https://doi.org/10.1039/D5NR01872B

74. Automated atomic site determination by four-dimensional scanning transmission electron microscopy data analytics
Fernandez-Canizares, Francisco; Rodriguez-Vazquez, Javier; Ferreira, Rafael V.; Tenreiro, Isabel; Rivera-Calzada, Alberto; Fernando-Saavedra, Amalia; Sanchez-Garcia, Miguel A.; **Xie, Yong**; Castellanos-Gomez, Andres; Varela, Maria; Sánchez-Santolino, Gabriel (author position: 8/11)
Ultramicroscopy, 2026. Citations: 0
DOI: https://doi.org/10.1016/j.ultramic.2025.114303

73. Building an affordable self-driving lab: Practical machine learning experiments for physics education using Internet-of-Things
Liu, Yang; Lei, Qianjie; He, Xiaolong; Xue, Yizhe; He, Kexin; Yang, Haitao; Wang, Yong; Zhang, Xian; Yang, Li; Zhou, Yichun; Hu, Ruiqi; **Xie, Yong** (author position: 12/12)
APL Machine Learning, 2025. Citations: 1
DOI: https://doi.org/10.1063/5.0283529

72. Low-Cost Maskless Photolithography Using an LCD-3D Printer for Microelectronic Devices
Wu, Qianjian; Zhang, Ying; Pucher, Thomas; McLarnon, Bob; Zamora Amo, Esteban; Zhang, Peng; **Xie, Yong**; Castellanos-Gomez, Andres (author position: 7/8)
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DOI: https://doi.org/10.1002/smtd.202501336

71. A Hermetically Sealed Micro Vacuum Ultraviolet Light Source for Detection of VOCs
You, Weilong; Chen, Wen; **Xie, Yong**; Liu, Sheng; Wu, Guoqiang (author position: 3/5)
IEEE Electron Device Letters, 2025. Citations: 0
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70. Short-wave infrared photocurrent spectroscopy to probe narrow-gap 2D materials
Pucher, Thomas; Bastante, Pablo; **Xie, Yong**; Castellanos-Gomez, Andres (author position: 3/4)
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69. Toward Full Autonomous Laboratory Instrumentation Control with Large Language Models
Xie, Yong; He, Kexin; Castellanos-Gomez, Andres (author position: 1/3)
Small Structures, 2025. Citations: 6
DOI: https://doi.org/10.1002/sstr.202500173

68. Low-Symmetry 2D *t*-InTe for Polarization-Sensitive UV-Vis-NIR Photodetection
Zhou, Nan; Dang, Ziwei; Li, Haoran; Sun, Zongdong; Deng, Shijie; Li, Junhao; Li, Xiaobo; Bai, Xiaoxia; **Xie, Yong**; Li, Liang; Zhai, Tianyou (author position: 9/11)
Small, 2024. Citations: 10
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67. Precise Synthesis and Broadband Photoresponse of Two-Dimensional Intrinsic Vacancy Semiconductor

Zhou, Nan; Li, Haoran; Li, Xiaobo; Dang, Ziwei; Sun, Zongdong; Deng, Shijie; Li, Junhao; Xu, Hua; Xia, Fangfang; **Xie, Yong**; Zhai, Tianyou (author position: 10/11)
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66. Identification and Structural Characterization of Twisted Atomically Thin Bilayer Materials by Deep Learning
Yang, Haitao; Hu, Ruiqi; Wu, Heng; Zhou, Yan; He, Yizhe; He, Kexin; Hu, Wenshuai; Chen, Haosen; Gong, Mingming; Zhang, Xin; Tan, Ping-Heng; Hernández, Eduardo R.; **Xie, Yong** (author position: 14/14)
Nano Letters, 2024. Citations: 18
DOI: https://doi.org/10.1021/acs.nanolett.3c04815

65. A Unified Prediction Strategy for Angle-Resolved Polarized Raman Response of Black Phosphorus
Zou, Bo; Yang, Jinfeng; **Xie, Yong**; Ke, Dingning; Chen, Yuxiang; Zhou, Yan; Sun, Huarui (author position: 3/7)
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DOI: https://doi.org/10.1002/lpor.202400485

64. 1-Phototransistor-1-Threshold Switching Optoelectronic Neuron for In-Sensor Compression via Spiking Neuron Network
Wang, Rui; Li, Fanfan; Li, Dingwei; Wang, Chuanqing; Tang, Yingjie; Liu, Guolei; Wang, Saisai; **Xie, Yong**; Sawan, Mohamad; Ma, Xiaohua; Zhu, Bowen; Qiu, Min; Wang, Hong; Hao, Yue (author position: 8/14)
IEEE 2023 International Electron Devices Meeting (IEDM), 2023. Citations: 7
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63. Van der Waals materials for paper electronics
Zhang, Wenliang; He, Kexin; Castellanos-Gomez, Andres; **Xie, Yong** (author position: 4/4)
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62. Biodegradable albumen dielectrics for high-mobility MoS_2 phototransistors
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61. High-Throughput Mechanical Exfoliation for Low-Cost Production of van der Waals Nanosheets
Sozen, Yigit; Riquelme, Juan J.; **Xie, Yong**; Munuera, Carmen; Castellanos-Gomez, Andres (author position: 3/5)
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60. Low T direct plasma assisted growth of graphene on sapphire and its integration in graphene/MoS_2 heterostructure-based photodetectors
Muñoz, Roberto; López-Elvira, Elena; Munuera, C.; Carrascoso, F.; **Xie, Yong**; Çakıroğlu, O.; Pucher, Thomas; Puebla, Sergio; Castellanos-Gomez, Andres; García-Hernández, Mar (author position: 5/10)
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59. Making exciton physics easy and affordable
Xie, Yong; Ersu, Gulsum; Pucher, Thomas; Kuriakose, Sruthi; Zhang, Wenliang; Al-Enizi, Abdullah M.; Albrithen, Hamad A H; Nafady, Ayman; Bratschitsch, Rudolf; Island, Joshua O. Castellanos-Gomez, Andres (author position: 1/11)
European Journal of Physics, 2023. Citations: 1
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58. Vertically molybdenum disulfide nanosheets on carbon cloth using CVD by controlling growth atmosphere for electrocatalysis

Wang, Haolin; Geng, Longfei; Zhang, Zixuan; Zhong, Peng; Liu, Fei; **Xie, Yong**; Zhao, Yajuan; Li, Peixian; Ma, Xiaohua (author position: 6/9)
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57. Approaching the Intrinsic Properties of Moiré Structures Using Atomic Force Microscopy Ironing
Palai, Swaroop Kumar; Dyskis, Mateusz; Sokolowski, Nikodem; Ciorga, Mariusz; Sánchez Viso, Estrella; **Xie, Yong**; Schubert, Alina; Taniguchi, Takashi; Watanabe, Kenji; Maude, Duncan K.; Surrente, Alessandro; Baranowski, Michał; Castellanos-Gomez, Andres; Munuera, Carmen; Plochocka, Paulina (author position: 6/15)
Nano Letters, 2023. Citations: 10
DOI: https://doi.org/10.1021/acs.nanolett.2c04765

56. Laser trimming for lithography-free fabrications of MoS_2 devices
Xie, Yong; Çakiroğlu, Onur; Hu, Wenshuai; He, Kexin; Puebla, Sergio; Zhao, Qinghua; Ma, Xiaohua; Munuera, Carmen; Castellanos-Gomez, Andres (author position: 1/9)
Nano Research, 2023. Citations: 10
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55. Bone Conduction Pickup Based on Piezoelectric Micromachined Ultrasonic Transducers
Liu, Chongbin; Wang, Xiangyang; **Xie, Yong**; Wu, Guoqiang (author position: 3/4)
IEEE 36th International Conference on Micro Electro Mechanical Systems (MEMS), 2023. Citations: 2
DOI: https://doi.org/10.1109/MEMS49605.2023.10052340

54. An Automated System for Strain Engineering and Straintronics of 2D Materials
Çakiroğlu, Onur; Island, Joshua O.; **Xie, Yong**; Frisenda, Riccardo; Castellanos-Gomez, Andres (author position: 3/5)
Advanced Materials Technologies, 2023. Citations: 42
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53. Solvent-free fabrication of broadband WS_2 photodetectors on paper
Zhang, Wenliang; Çakiroğlu, Onur; Al-Enizi, Abdullah M.; Nafady, Ayman; Gan, Xuetao; Ma, Xiaohua; Kuriakose, Sruthi; **Xie, Yong**; Castellanos-Gomez, Andres (author position: 8/9)
Opto-Electronic Advances, 2022. Citations: 27
DOI: https://doi.org/10.29026/oea.2023.220101

52. Combining Freestanding Ferroelectric Perovskite Oxides with Two-Dimensional Semiconductors for High Performance Transistors
Puebla, Sergio; Pucher, Thomas; Rouco, Victor; Sanchez-Santolino, Gabriel; **Xie, Yong**; Zamora, Victor; Cuellar, Fabian A.; Mompean, Federico J.; Island, Joshua O.; Garcia-Hernandez, Mar; Santamaría, Jacobo; Munuera, Carmen; Castellanos-Gomez, Andres (author position: 5/14)
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51. Straining of atomically thin WSe_2 crystals: Suppressing slippage by thermal annealing
Hu, Wenshuai; Wang, Yabin; He, Kexin; He, Xiaolong; Bai, Yan; Liu, Chenyang; Zhou, Nan; Wang, Haolin; Li, Peixian; Ma, Xiaohua; **Xie, Yong** (author position: 11/11)
Journal of Applied Physics, 2022. Citations: 8
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50. Unusual Deformation and Fracture in Gallium Telluride Multilayers
Zhou, Yan; Zhou, Shi; Yang, Penghua; Zhao, Qinghua; **Xie, Yong**; Song, Mingming; Jiang, Pisu; Cai, Hui; Chen, Bin; Tongay, Sefaattin; Zhang, Jin; Jie, Wanqi; Tan, Pingheng; Liu, Dong; Kuball, Martin (author position: 5/16)
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49. Deformation Mechanism of Depositing Amorphous Cu-Ta Alloy Film via Nanoindentation Test
Li, Weibing; Wang, Xiao; Feng, Xiaobin; Du, Yao; Zhang, Xu; **Xie, Yong**; Chen, Xiaoming; Lu, Yang; Wang, Weidong (author position: 6/9)
Nanomaterials, 2022. Citations: 8
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48. Stretching ReS_2 along different crystal directions: Anisotropic tuning of the vibrational and optical responses
Li, Hao; Lin, Der-Yuh; Di Renzo, Anna; Puebla, Sergio; Frisenda, Riccardo; Gan, Xuetao; **Xie, Yong**; Al-Enizi, Abdullah M.; Nafady, Ayman; Castellanos-Gomez, Andres (author position: 8/9)
Applied Physics Letters, 2022. Citations: 18
DOI: https://doi.org/10.1063/5.0081127

47. Spin Ordering Induced Broadband Photodetection Based on Two-Dimensional Magnetic Semiconductor α-MnSe
Zhou, Nan; Zhang, Zhimiao; Wang, Fakun; Li, Junhao; Xu, Xiang; Li, Haoran; Ding, Su; Liu, Jinmei; Li, Xiaobo; **Xie, Yong**; Yang, Rusen; Ma, Ying; Zhai, Tianyou (author position: 10/13)
Advanced Science, 2022. Citations: 35
DOI: https://doi.org/10.1002/advs.202202177

46. Straining and Tuning Atomic Layer Nanoelectromechanical Resonators via Comb-Drive MEMS Actuators
Xie, Yong; Lee, Jaesung; Wang, Yanan; Feng, Philip X.-L. (author position: 1/4)
Advanced Materials Technologies, 2021. Citations: 26
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45. Controlled Growth of Edge-Enriched ReS_2 Nanoflowers on Carbon Cloth Using Chemical Vapor Deposition for Hydrogen Evolution
Zhao, Yajuan; Li, Jianguo; Huang, Jianfeng; Feng, Liangliang; Cao, Liyun; Feng, Yongqiang; Zhang, Zhaohui; **Xie, Yong**; Wang, Haolin (author position: 8/9)
Advanced Materials Interfaces, 2020. Citations: 26
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44. 2H/1T' phase $WS_{2(1-x)}Te_{2x}$ alloys grown by chemical vapor deposition with tunable band structures
Wang, Zhan; Sun, Jing; Wang, Haolin; Lei, Yimin; **Xie, Yong**; Wang, Guanfei; Zhao, Ying; Li, Xiaobo; Xu, Hua; Yang, Xubo; Feng, Liping; Ma, Xiaohua (author position: 5/12)
Applied Surface Science, 2020. Citations: 32
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43. Passivation of Layered Gallium Telluride by Double Encapsulation with Graphene
Mercado, Elisha; Zhou, Yan; **Xie, Yong**; Zhao, Qinghua; Cai, Hui; Chen, Bin; Jie, Wanqi; Tongay, Sefaattin; Wang, Tao; Kuball, Martin (author position: 3/10)
ACS Omega, 2019. Citations: 33
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42. Hexagonal Boron Nitride Phononic Crystal Waveguides
Wang, Yanan; Lee, Jaesung; Zheng, Xu-Qian; **Xie, Yong**; Feng, Philip X.-L. (author position: 4/5)
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41. Frequency Tuning of Two-Dimensional Nanoelectromechanical Resonators Via Comb-Drive MEMS Actuators
Xie, Yong; Lee, Jaesung; Jia, Hao; Feng, Philip X.-L. (author position: 1/4)
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40. Optical contrast signatures of hexagonal boron nitride on a device platform
Wang, Yanan; Zhou, Vivian; **Xie, Yong**; Zheng, Xu-Qian; Feng, Philip X.-L. (author position: 3/5)
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39. Beta gallium oxide (β-Ga_2O_3) nanoelectromechanical transducer for dual-modality solar-blind ultraviolet light detection
Zheng, Xu-Qian; **Xie, Yong**; Lee, Jaesung; Jia, Zhitai; Tao, Xutang; Feng, Philip X.-L. (author position: 2/6)
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38. A Self-Sustained Frequency Comb Oscillator via Tapping Mode Comb-Drive Resonator Integrated with a Feedback ASIC
Wei, Ran; Lee, Jaesung; Mei, Tengda; **Xie, Yong**; Islam, Mohammad S.; Mandal, Soumyajit (author position: 4/7)
2019 IEEE 32nd International Conference on Micro Electro Mechanical Systems (MEMS), 2019. Citations: 9
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37. High-Frequency Hexagonal Boron Nitride (h-BN) Phononic Waveguides
Wang, Yanan; Lee, Jaesung; **Xie, Yong**; Zheng, Xu-Qian; Feng, Philip X.-L. (author position: 3/5)
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36. Growth of Monolayer WS_2 Single Crystals with Atmospheric Pressure CVD: Role of Temperature
Xie, Yong; Wang, Guanfei; Wang, Zhan; Nan, Tang; Wang, Haolin; Wang, Yabin; Zhan, Yongjie; Jie, Wanqi; Ma, Xiaohua (author position: 1/9)
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35. A Programmable Sustaining Amplifier for Flexible Multimode MEMS-Referenced Oscillators
Islam, Mohammad S.; Singh, Siddharth K.; Lee, Jaesung; **Xie, Yong**; Zorman, Christian A.; Feng, Philip X.-L. (author position: 4/6)
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34. A Temperature-Compensated Single-Crystal Silicon-on-Insulator (SOI) MEMS Oscillator with a CMOS Amplifier Chip
Islam, Mohammad S.; Wei, Ran; Lee, Jaesung; **Xie, Yong**; Mandal, Soumyajit; Feng, Philip X.-L. (author position: 4/6)
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33. Lattice Vibration of Layered GaTe Single Crystals
Wang, Tao; Zhao, Qinghua; Miao, Yaping; Ma, Fei; **Xie, Yong**; Jie, Wanqi (author position: 5/6)
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32. Annealing temperature - dependent electronic properties in hydrothermal TiO_2 nanorod arrays
Zhong, Peng; Chen, Xinpeng; Jia, Qiaoying; Zhu, Gangqiang; Lei, Yimin; Xi, He; **Xie, Yong**; Zhou, Xuejiao; Ma, Xiaohua (author position: 7/9)
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31. The Electronic Properties of O-Doped Pure and Sulfur Vacancy-Defect Monolayer WS_2: A First-Principles Study
Wang, Weidong; Bai, Liwen; Yang, Chenguang; Fan, Kangqi; **Xie, Yong**; Li, Minglin (author position: 5/6)
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30. High-Quality GaSe Single Crystal Grown by the Bridgman Method
Wang, Tao; Li, Jie; Zhao, Qinghua; Yin, Ziang; Zhang, Yinghan; Chen, Bingqi; **Xie, Yong**; Jie, Wanqi (author position: 7/8)
Materials, 2018. Citations: 39
DOI: https://doi.org/10.3390/ma11020186

29. NaCl-Assisted CVD Synthesis, Transfer and Persistent Photoconductivity Properties of Two-Dimensional Transition Metal Dichalcogenides
Xie, Yong; Ma, Xiaohua; Wang, Zhan; Nan, Tang; Wu, Ruixue; Zhang, Peng; Wang, Haolin; Wang, Yabin; Zhan, Yongjie; Hao, Yue (author position: 1/10)
MRS Advances, 2018. Citations: 16
DOI: https://doi.org/10.1557/adv.2018.156

28. Experimental study on an evaporation process to deposit MoO_2 microflakes
Guo, Yaohui; Zhao, Qiyi; Zhan, Yongjie; Xu, Xinlong; **Xie, Yong** (author position: 5/5)
Chemical Physics Letters, 2017. Citations: 9
DOI: https://doi.org/10.1016/j.cplett.2017.08.043

27. NaCl-assisted one-step growth of MoS_2–WS_2 in-plane heterostructures
Wang, Zhan†; **Xie, Yong**†; Wang, Haolin; Wu, Ruixue; Nan, Tang; Zhan, Yongjie; Sun, Jing; Jiang, Teng; Zhao, Ying; Lei, Yimin; Yang, Mei; Wang, Weidong; Zhu, Qing; Ma, Xiaohua; Hao, Yue (author position: 2/15)
Nanotechnology, 2017. Citations: 136
DOI: https://doi.org/10.1088/1361-6528/aa6f01

26. Persistent photoconductivity in ZnO nanowires: Influence of oxygen and argon ambient
Madel, Manfred Anton; Huber, Florian; Mueller, Raphael; Amann, Bruno; Dickel, Martin; **Xie, Yong**; Thonke, Klaus (author position: 6/7)
Journal of Applied Physics, 2017. Citations: 52
DOI: https://doi.org/10.1063/1.4978911

25. Recent progress in synthesis of two-dimensional hexagonal boron nitride
Wang, Haolin; Zhao, Yajuan; **Xie, Yong**; Ma, Xiaohua; Zhang, Xingwang (author position: 3/5)
Journal of Semiconductors, 2017. Citations: 110
DOI: https://doi.org/10.1088/1674-4926/38/3/031003

24. Controllable growth of monolayer MoS_2 by chemical vapor deposition via close MoO_2 precursor for electrical and optical applications
Xie, Yong; Wang, Zhan; Zhan, Yongjie; Zhang, Peng; Wu, Ruixue; Jiang, Teng; Wu, Shiwei; Wang, Hong; Zhao, Ying; Nan, Tang; Ma, Xiaohua (author position: 1/11)
Nanotechnology, 2017. Citations: 94
DOI: https://doi.org/10.1088/1361-6528/aa5439

23. Sonication-polished anodic TiO_2 nanotube array-based photoanode for efficient solar energy conversion
Gu, Kai; Zhong, Peng; Guo, Mengqi; Ma, Jie; Jiang, Qi; Zhang, Shan; Zhou, Xuejiao; **Xie, Yong**; Ma, Xiaohua; Wang, Yang (author position: 8/10)
Journal of Solid State Electrochemistry, 2016. Citations: 8
DOI: https://doi.org/10.1007/s10008-016-3301-9

22. Evolution of resistive switching and its ionic models in Pt/Nb-doped $SrTiO_3$ junctions
Yang, Mei; Ma, Xiaohua; Wang, Hong; Xi, He; Lv, Ling; Zhang, Peng; **Xie, Yong**; Gao, Haixia; Cao, Yanrong; Li, Shuwei; Hao, Yue (author position: 8/11)
Materials Research Express, 2016. Citations: 9

DOI: https://doi.org/10.1088/2053-1591/3/7/075903

21. Dissolvable and Biodegradable Resistive Switching Memory Based on Magnesium Oxide
Wu, Shiwei; Wang, Hong; Sun, Jing; Song, Fang; Wang, Zhan; Yang, Mei; Xi, He; **Xie, Yong**; Gao, Haixia; Ma, Jigang; Ma, Xiaohua; Hao, Yue (author position: 8/12)
IEEE Electron Device Letters, 2016. Citations: 40
DOI: http://doi.org/10.1109/LED.2016.2585665

20. Oxygen Vacancies Induced DX Center and Persistent Photoconductivity Properties of High-Quality ZnO Nanorods
Xie, Yong; Madel, Manfred; Feneberg, Martin; Neuschl, Benjamin; Jie, Wanqi; Hao, Yue; Ma, Xiaohua; Thonke, Klaus (author position: 1/8)
Materials Research Express, 2016. Citations: 14
DOI: http://doi.org/10.1088/2053-1591/3/4/045011

19. Spatially Resolved and Orientation Dependent Raman Mapping of Epitaxial Lateral Overgrowth Nonpolar a-plane GaN on r-plane Sapphire
Jiang, Teng; Xu, Sheng-rui; Zhang, Jin-cheng; **Xie, Yong**; Hao, Yue (author position: 4/5)
Scientific Reports, 2016. Citations: 37
DOI: http://doi.org/10.1038/srep19955

18. Large Scale Production of Graphene Quantum Dots Through the Reaction of Graphene Oxide with Sodium Hypochlorite
Zhou, Xuejiao; Guo, Shouwu; Zhong, Peng; **Xie, Yong**; Li, Zhimin; Ma, Xiaohua (author position: 4/6)
RSC Advances, 2016. Citations: 29
DOI: https://doi.org/10.1039/C6RA06012A

17. Thickness-Induced Structural Phase Transformation of Layered Gallium Telluride
Zhao, Q.; Wang, T.; Miao, Y.; Ma, F.; **Xie, Yong**; Ma, X.; Gu, Y.; Li, J.; He, J.; Chen, B.; Xi, S.; Xu, L.; Zhen, H.; Li, J.; Ren, J.; Jie, W. (author position: 5/17)
Physical Chemistry Chemical Physics, 2016. Citations: 115
DOI: https://doi.org/10.1039/C6CP01963C

16. Comparative study on interface and bulk charges in AlGaN/GaN metal–insulator–semiconductor heterostructures with Al_2O_3, AlN, and Al_2O_3/AlN laminated dielectrics
Zhu, Jie-Jie; Ma, Xiao-Hua; Chen, Wei-Wei; Hou, Bin; **Xie, Yong**; Hao, Yue (author position: 5/6)
Japanese Journal of Applied Physics, 2016. Citations: 11
DOI: https://doi.org/10.7567/JJAP.55.05FH01

15. Using in-process measurements of open-gate structures to evaluate threshold voltage of normally-off GaN-based high electron mobility transistors
Hou, Bin; Ma, Xiao-Hua; Chen, Wei-Wei; Zhu, Jie-Jie; Zhao, Sheng-Lei; Chen, Yong-He; **Xie, Yong**; Zhang, Jin-Cheng; Hao, Yue (author position: 7/9)
Applied Physics Letters, 2015. Citations: 7
DOI: https://doi.org/10.1063/1.4934815

14. Optical gas sensing by micro-photoluminescence on multiple and single ZnO nanowires
Madel, Manfred; Jakob, Julian; Huber, Florian; Neuschl, Benjamin; Bauer, Sebastian; **Xie, Yong**; Tischer, Ingo; Thonke, Klaus (author position: 6/8)
physica status solidi (a), 2015. Citations: 18
DOI: https://doi.org/10.1063/1.4934185

13. Quality factor measurement for MEMS resonator using time-domain amplitude decaying method
Wang, Yuzhao; **Xie, Yong**; Zhang, Tianlei; Wu, Guoqiang; Wang, Gang; Yu, Caijia (author position: 2/6)
Microsystem Technologies, 2015. Citations: 11
DOI: http://doi.org/10.1007/s00542-014-2161-4

12. Improved Interface and Transport Properties of AlGaN/GaN MIS-HEMTs With PEALD-Grown AlN Gate Dielectric
Zhu, Jie-Jie; Ma, Xiao-Hua; **Xie, Yong**; Hou, Bin; Chen, Wei-Wei; Zhang, Jin-Cheng,Hao Yue (author position: 3/7)
IEEE Transactions on Electron Devices, 2014. Citations: 104
DOI: http://doi.org/10.1109/TED.2014.2377781

11. Polarity-controlled ultraviolet/visible light ZnO nanorods/p-Si photodetector
Xie, Yong; Madel, Manfred; Li, Yujie; Jie, Wanqi; Neuschl, Benjamin; Feneberg, Martin; Thonke, Klaus (author position: 1/7)
Journal of Applied Physics, 2012. Citations: 25
DOI: http://doi.org/10.1063/1.4771696

10. Silicon-on-insulator based ZnO nanowire photodetector
Xie, Yong; Madel, Manfred; Neuschl, Benjamin; Jie, Wanqi; Röder, Uwe; Feneberg, Martin; Thonke, Klaus (author position: 1/7)
Journal of Vacuum Science & Technology B, 2012. Citations: 3
DOI: http://doi.org/10.1116/1.4759261

9. Suppression of gallium inhomogeneity in ZnO nanostructures on GaN using seed layers
Xie, Yong; Jie, Wanqi; Reiser, Anton; Feneberg, Martin; Tischer, Ingo; Wiedenmann, Michael; Madel, Manfred; Frey, Reinhard; Roeder, Uwe; Thonke, Klaus (author position: 1/10)
Materials Letters, 2012. Citations: 2
DOI: https://doi.org/10.1016/j.matlet.2012.05.119

8. Growth-induced Stacking Faults of ZnO Nanorods Probed by Spatial Resolved Cathodoluminescence
Xie, Yong; Jie, Wanqi; Tao, Wang; Wiedenmann, Michael; Neuschl, Benjamin; Madel, Manfred; Wang, Ya-bin; Feneberg, Martin; Thonke, Klaus (author position: 1/9)
Chinese Physics Letters, 2012. Citations: 7
DOI: https://doi.org/10.1088/0256-307X/29/7/077803

7. Towards the cost effective epitaxy of hillocks free CdZnTe film on (001)GaAs by close-spaced sublimation
Gao, Junning; Jie, Wanqi; Xie, Yong; Zheng, Xin; Yu, Hui; Wang, Tao; Pan, Guoqiang (author position: 3/7)
Materials Letters, 2012. Citations :8
DOI: https://doi.org/10.1016/j.matlet.2012.03.050

6. Enforced c-axis growth of ZnO epitaxial chemical vapor deposition films on a-plane sapphire
Xie, Yong; Madel, Manfred; Zoberbier, Thilo; Reiser, Anton; Jie, Wanqi; Neuschl, Benjamin; Biskupek, Johannes; Kaiser, Ute; Feneberg, Martin; Thonke, Klaus (author position: 1/10)
Applied Physics Letters, 2012. Citations: 30
DOI: https://doi.org/10.1063/1.4709430

5. One-step fast deposition of thick epitaxial CdZnTe film on (001)GaAs by close-spaced sublimation
Gao, Junning; Jie, Wanqi; Yuan, Yanyan; Wang, Tao; **Xie, Yong**; Wang, Yabin; Huang, Yuhong; Tong, Junli; Yu, Hui; Pan, Guoqiang (author position: 5/10)
CrystEngComm, 2012. Citations: 19
DOI: https://doi.org/10.1039/C1CE06412F

4. Catalytic growth of hexagonally aligned ZnO nanorods
Madel, Manfred; **Xie, Yong**; Tischer, Ingo; Neuschl, Benjamin; Feneberg, Martin; Frey, Reinhard; Thonke, Klaus (author position: 2/7)
physica status solidi (a), 2011. Citations: 5
DOI: https://doi.org/10.1002/pssb.201147101

3. Epitaxial growth of coaxial GaInN-GaN hetero-nanotubes
Scholz, F.; Thapa, S. B.; Fikry, M.; Hertkorn, J.; Wunderer, T.; Lipski, F.; Reiser, A.; **Xie, Yong**; Feneberg, M.; Thonke, K.; Sauer, R.; Dürrschnabel, M.; Yao, L. D.; Gerthsen, D. (author position: 8/14)
IOP Conference Series: Materials Science and Engineering, 2009. Citations: 8
DOI: https://doi.org/10.1088/1757-899X/6/1/012002

2. MOVPE growth of GaN around ZnO nanopillars
Thapa, S. B.; Hertkorn, J.; Wunderer, T.; Lipski, F.; Scholz, F.; Reiser, A.; **Xie, Yong**; Feneberg, M.; Thonke, K.; Sauer, R.; Dürrschnabel, M.; Yao, L. D.; Gerthsen, D.; Hochmuth, H.; Lorenz, M.; Grundmann, M. (author position: 7/16)
Journal of Crystal Growth, 2008. Citations: 19
DOI: https://doi.org/10.1016/j.jcrysgro.2008.07.009

1. Characterization of HgMnTe crystals grown by vertical Bridgman method
Wang, Z.; Jie, W.; **Xie, Yong**; Wang, H. (author position: 3/4)
Journal of Crystal Growth, 2007. Citations: 5
DOI: https://doi.org/10.1016/j.jcrysgro.2007.03.043

Patents:

10. Chinese patent (CN 115663042B) "Self-powered polarization sensitive photoelectric detector and preparation method thereof" Nan Zhou, Junhao Li, **Yong Xie**, Xiaobo Li, Haoran Li, Ziwei Dang. Status: Granted

9. Chinese patent (CN 114990698B) "Large-area uniform single-layer tungsten disulfide, preparation method and photoelectronic element" Zixuan Zhang, Haolin Wang, Longfei Geng, Xiaoxiao Li, Zheng Liu, Yan Bai, Chenze Wang, Xiaowei Zhou, **Yong Xie**, Weiwei Wu, Peixian Li. Status: Granted

8. Chinese patent (CN 114530522B) "Preparation method of gallium oxide suspension transistor array" **Yong Xie**, Wenshuai Hu, Xiaoli Lu, Yu Liang, Chenyang Liu, Yan Bai, Xiaohua Ma. Status: Granted

7. Chinese patent (CN 113104807B) "Manufacturing method of micro-electromechanical actuator of strain regulation and control low-dimensional material" **Yong Xie**, Chenyang Liu, Yunqi Mu, Yan Bai, Haolin Wang, Wenshuai Hu, Xiaohua Ma. Status: Granted

6. Chinese patent (CN 113375581B) "Device and method for testing strain of low-dimensional material in different directions" **Yong Xie**, Wenshuai Hu, Aiying Peng, Peng Zhang, Hao Jia. Status: Granted

5. Chinese patent (CN 110228796B) "A kind of preparation method of thin-layer two-dimensional transition metal tellurium-based solid solution" Xiaohua Ma, Zhan Wang, Guanfei Wang, Jing Sun, Weifan Zhou, Qian Yu, Haolin Wang, **Yong Xie**. Status: Granted

4. Chinese patent (CN 106018527B) "GaN biosensor provided with integrated type solid film Pt reference electrode and manufacturing method" Peng Zhang, Chenyang Zhang, **Yong Xie**, Xiaohua Ma, Jianzhang Shi, Yue Hao. Assignee: [Transferred into Industry]

3. Chinese patent (CN 105806913B) "GaN biosensor with integrated-type solid film reference electrode and producing method" Peng Zhang, Chenyang Zhang, **Yong Xie**, Xiaohua Ma, Jianzhang Shi, Yue Hao. Assignee: [Transferred into Industry]

2. Chinese patent (CN 106350782B) "Method for transferring two-dimensional transition metal chalcogenides on basis of water vapor" Xiaohua Ma, Tang Nan, Zhan Wang, **Yong Xie**, Jinjin Li, Ruixue Wu, Yimin Lei. Status: Granted

1. Chinese patent (CN 107154435B) "Grading current barrier layer vertical-type power device" Wei Mao, Penghao Shi, Zhaoke Bian, Xiaohua Ma, Kang Li, **Yong Xie**. Status: Granted

Coordination of research projects (*In the Chinese university system, master's students' basic living costs are largely covered by universities through institutional stipends and low-cost accommodation, while PI-level competitive research grants typically provide partial living allowances, daily research expenses, and consumables rather than full scholarships. Accordingly, students are often co-supported by multiple concurrent projects, with each grant contributing a limited share of the training cost, typically ~500-1000 RMB per month per student*):

10. Strain Engineering of Infrared Semiconductor Materials and Optoelectronic Devices Based on MEMS Actuators (Grant No. SITP-NLIST-ZD-2024-01)

Funding: The Fund of the State Key Laboratory of Infrared Physics
Research institutions: Xidian University
Duration: 2 years (June 2024 - June 2026)
Funding: 200,000 RMB (25,000 Euros)
Principal Investigator: Yong Xie
Impact: Through this project, six Master's students trained and partially supported within a multi-project co-funding framework.. Three students (K. He, X. He, Y. Xue) have completed their degrees, two (Q. Lei, Y. Liu) are scheduled to graduate in the coming summer, and one (J. Kang) is currently pursuing the degree. The project has resulted in five peer-reviewed journal publications.

9. Key Technologies and Mechanisms of Two-Dimensional Semiconductor Spectrometers (Grant No. QTZX23026)

Funding: Fundamental Research Funds for the Central Universities
Research institutions: Xidian University
Duration: 1 year (Jan. 2023 - Dec. 2023)
Funding: 60,000 RMB (7,500 Euros)
Principal Investigator: Yong Xie
Impact: The project initiated a new research line on 2D materials-enabled spectrometers. Within a multi-project co-support framework, three Master's students (K. He, X. He, and Y. Xue) conducted research in this direction and completed their degrees, with this project providing partial research support. The project has resulted in six peer-reviewed journal publications.

8. Strain Engineering of Two-Dimensional Semiconductors and Photodetectors Based on MEMS Actuators (Grant No. JB211409)

Funding: Fundamental Research Funds for the Central Universities
Research institutions: Xidian University
Duration: 2 years (Jan. 2021 - Dec. 2022)
Funding: 60,000 RMB (7,500 Euros)
Principal Investigator: Yong Xie
Impact: Through this project, the applicant strengthened the research line on MEMS-actuated strain engineering of two-dimensional semiconductor photodetectors. The project partially supported, within a multi-project training framework, several Master's students (Y. Xue, H. Yang, Z. Dang, W. Hu, C. Liu, and Y. Bai), reinforcing graduate training and sustained research capacity in strain-engineered 2D optoelectronic devices. The project has resulted in three peer-reviewed journal publications.

7. On-Chip Strain Engineering of Two-Dimensional Semiconductor Optoelectronic Devices (Grant No. 62011530438)

Funding: National Natural Science Foundation of China (NSFC) International Cooperation and Exchange Project with the dual support of ERC
Research institutions: Xidian University
Duration: 3 years (Sep. 2020 - June 2023)
Funding: 30,000 RMB (3,750 Euros)
Principal Investigator: Yong Xie
Impact: As a national-level NSFC talent-oriented project, this grant supported international travel costs and enabled the establishment of a strategic collaboration with Prof. A. Castellanos-Gomez through sustained in-person research exchanges. This collaboration subsequently evolved into long-term joint research activities and follow-up international projects, significantly strengthening the applicant's international research profile. The project has resulted in eight peer-reviewed journal publications.

6. Two-Dimensional Semiconductor Optoelectronic Devices and Strain Engineering (Grant No. 2021KW-02)

Funding: Key Research and Development Program of Shaanxi
Research institutions: Xidian University
Duration: 3 years (Sep. 2020 - June 2023)
Funding: 50,000 RMB (6,250 Euros)
Principal Investigator: Yong Xie
Impact: As a regional-level international collaboration project, the funding supported international travel costs only and enabled the establishment of a research collaboration with Prof. A. Castellanos-Gomez

and other researchers from ICMM-CSIC in the field of two-dimensional semiconductor optoelectronic devices and strain engineering. This project reinforced and expanded existing collaborative links, contributing to stable joint research activities and resulting in twelve peer-reviewed journal publications.

5. Mechanisms of Persistent Photoconductivity of Two-Dimensional Transition Metal Dichalcogenides and Its Supercritical Fluid Treatment Modulation (Grant No. 61704129)

Funding: National Natural Science Foundation of China (NSFC)
Research institutions: Xidian University
Duration: 3 years (Jan. 2018 - Dec. 2020)
Funding: 240,000 RMB (30,000 Euros)
Principal Investigator: Yong Xie
Impact: As a national-level NSFC talent-oriented project, this grant recognized the applicant's ability to independently advance research on two-dimensional transition metal dichalcogenides while supporting free scientific exploration. The project resulted in 16 peer-reviewed publications and the successful supervision and training of four Master's students (G. Wang, Y. Bai, C. Liu, and W. Hu) within a multi-project training framework at Xidian University.

4. Key Scientific Issues of High-Efficiency AlGaN-Based Deep UV LEDs (Grant No. 61634005)

Funding: National Natural Science Foundation of China (NSFC)
Research institutions: Xidian University
Duration: 5 years (Jan. 2017 - Dec. 2021)
Funding: 300,000 RMB (37,500 Euros)
Principal Investigator: Yong Xie
Impact: This NSFC project was closely aligned with the applicant's doctoral research on wide-bandgap semiconductors and focused on high-efficiency AlGaN-based deep ultraviolet LEDs with strong industrial relevance. The project emphasized practical device-oriented research, including MOCVD growth and material studies of GaN and Ga_2O_3. It supported the training of one Master's student (G Wang), resulted in one patent application, and facilitated the transfer and licensing of three authorized patents to industry, demonstrating technology translation and industrial impact.

3. Two-Dimensional Crystalline Heterostructures: CVD Growth, Characterization, and Device Applications (Grant No. 2017JQ5015)

Funding: Natural Science Basic Research Plan in Shaanxi Province of China
Research institutions: Xidian University
Duration: 2 years (Jan. 2017 - Dec. 2018)
Funding: 50,000 RMB (6,250 Euros)
Principal Investigator: Yong Xie
Impact: This project enabled the expansion of the applicant's research scope to crystalline heterostructures of two-dimensional materials, with emphasis on CVD growth, characterization, and device integration. The project partially supported the training of three Master's students (R. Wu, T. Nan, and G. Wang), all of whom successfully completed their degrees, contributing to early talent development in two-dimensional heterostructure research. The project has resulted in 4 peer-reviewed journal publications.

2. Growth, Characterization, and Device Applications of Two-Dimensional Semiconducting Materials (Grant No. SKLSP201612)

Funding: The Fund of the State Key Laboratory of Solidification Processing
Research institutions: Xidian University
Duration: 2 years (June 2016 - May 2018)
Funding: 60,000 RMB (7,500 Euros)
Principal Investigator: Yong Xie
Impact: Through this project, the applicant further broadened research activities on two-dimensional semiconducting materials, covering both nanoelectronic and optoelectronic device applications. The project partially supported three Master's students (R. Wu, T. Nan, and G. Wang), strengthening early-stage research capacity and personnel training in two-dimensional semiconductor devices. The project has resulted in 6 peer-reviewed journal publications.

1. Growth and Characterization of Two-Dimensional Semiconductor Materials (Grant No. JB151404)

Funding: Fundamental Research Funds for the Central Universities
Research institutions: Xidian University

Duration: 2 years (Sep. 2015 - Sep. 2017)
Funding: 60,000 RMB (7,500 Euros)
Principal Investigator: Yong Xie
Impact: With this project, the applicant established the two-dimensional materials CVD growth platform at Xidian University, laying the foundation for subsequent research activities. Building on this early-stage platform and in combination with follow-up projects, the applicant published two IOP *Nanotechnology* papers (both receiving "China Top Cited Paper Award 2020"), and two Master's students (R. Wu and T. Nan) completed their degrees during this period. The project has resulted in ten peer-reviewed journal publications.

Participation of research projects:

3. 'SKIN-like TWO-Dimensional materials-based elecTRONICS conformable to rough surfaces' (SKIN2DTRONICS) (ref. ERC-2024-SyG-101167218)

Funding: European Research Council – Synergy Grant
Research institutions: Research institutions: Università di Pisa (Italy), Consejo Superior de Investigaciones Científicas (CSIC), École Polytechnique Fédérale de Lausanne – EPFL (Switzerland), Institut Català de Nanociència i Nanotecnologia – ICN2 (Spain)
Duration: 6 years (2025 – 2031)
Funding: 2.3 M€ for CSIC (total project: 9.8 M€)
Principal Investigators: Gianluca Fiori (Uni Pisa), Andres Castellanos-Gomez (CSIC), Andras Kis (EPFL), Kostas Kostarelos (ICN2)
Role: Official collaborator and visiting professor at ICMM–CSIC, deeply involved in device fabrication, conformable strain sensors, optoelectronic characterization, and AI integration of two-dimensional semiconductors. Co-supervision of PhD student (Ying Zhang).

2. Strain engineered spatial light modulators based on 2D semiconductors (StEnSo)

Funding: European Research Council Proof-of-Concept
Research institutions: Consejo Superior de Investigaciones Científicas
Duration: 2 years (2025 – 2026)
Funding: €150,000
Principal Investigator: Andres Castellanos-Gomez
Role: Official collaborator and visiting professor at ICMM–CSIC, contributing to the translation of strain-engineered two-dimensional semiconductor devices toward functional prototypes, with particular involvement in device optimization, AI integration for data-driven control and characterization. Co-supervision of PhD student (Ying Zhang).

1. Tunable optoelectronic devices by strain engineering of 2D semiconductors (2D-TOPSENSE)

Funding: European Research Council
Research institutions: Consejo Superior de Investigaciones Científicas
Duration: 5 years (2018 – 2022)
Funding: €1,930,437
Principal Investigator: Andres Castellanos-Gomez
Role: Official collaborator and visiting professor at ICMM–CSIC, deeply involved in device fabrication, strain engineering, and optoelectronic characterization of two-dimensional semiconductors. Co-supervision of PhD student (Wenliang Zhang).

Contributions to workshops and meetings:

Invited Contributions

5. Conference of Science & Technology for Integrated Circuits (CSTIC) 2026, Shanghai, 22-24 March, 2026 (upcoming)
Artificial Intelligence for 2D Materials and Devices

4. Flatlands beyond Graphene, Politecnico di Milano , 1-5 Sep 2025
Towards Full Autonomous Synthesis and Characterization of Two-dimensional Materials

3. AI4Science workshop, Frankfurt, Germany, 20 Sep 2023
Deep Learning for Semiconductor Materials

2. Colloquium n. 636 – Modulation of physico-chemical processes by elastic strain engineering, Besançon, France, 22-24 May 2023
Large Straining Two-dimensional Semiconductors

1. 31st Annual Conference of the Society of Chinese Physicists in Germany, Germany(Berlin) & China(Changchun) & Online, 16 Sep 2022
Strain-controlled two-dimensional semiconductor materials and devices

Invited Seminars

6. University of Florida, 29 Nov 2025
Rolling Out 2D Materials: Scalable Exfoliation for Low-Cost Nanosheet Production
5. The University of Hong Kong, 29 June 2024
Straining of 2D Materials and Devices
4. Lanzhou University, 26 April 2024
Strain Engineering in Two-Dimensional Semiconductors: From Materials to Devices
3. University of Florida, 9 June 2023
Straining 2D Materials and Devices: From Materials to Devices
2. Xidian University, 22 Jan. 2022
Photoluminescence, Photodetection, and Strain Engineering in Low-Dimensional Semiconductor Materials
1. Northwestern Polytechnical University, 20 May 2017
Growth, Characterization and Applications of 2D Semiconductors

Stays in foreign research institutions:

4. Instituto de Ciencia de Materiales de Madrid (ICMM-CSIC).
Prof. Andres Castellanos-Gomez (Research Professor) 's group.
Madrid (Spain), 31 July 2021- present (≈ 4.5 years).
Research topic: Synthesis and applications of 2D semiconductors for nanoelectronics and optoelectronics.

3. The University of Hong Kong (HKU).
Prof. Yang Lu (Chair Professor of Nanomechanics) 's group.
Hong Kong (China), 25 June -1 July 2024 (1 week).
Research topic: Straining of 2D semiconductors for nanoelectronics and optoelectronics.

2. Case Western Reserve University (CWRU).
Prof. Philip Feng (recipient of the PECASE award and currently Rhines Endowed Professor of Semiconductors at the University of Florida) 's group.
Cleveland (USA), November 2017 and November 2019 (24 months).
Research topic: 2D semiconductors for nanoelectronics and optoelectronics.

1. University of Ulm (UUlm).
Prof. Dr. Klaus Thonke's group.
Ulm (Germany), October 1st, 2007 to March 31st, 2010 (30 months).
Research topic: Epitaxial growth, characterization, and device applications of ZnO nanostructures.

Participation in scientific advisory works and reports:

Ph.D. Defense Committee Invitations:

Dr. Felix Carrascoso, Dr. Hao Li, and Dr. Onur Çakıroğlu (ICMM-CSIC/UAM)
Period: 2021 – 2025

Editorial Roles:

Editorial Board Member, Scientific Reports

Youth Editorial Board Member, Materials Futures (IOP), Special Recognition Award

Guest Editor, Special Issue on "*Optical coatings*", Scientific Reports

Guest Editor, Special Issue on "*Solid-State Quantum Materials and Devices*", Micromachines

Peer Review Activities:

Reviewer for more than a dozen international journals, including Nature Microsystems & Nanoengineering, Nano Research, Applied Physics Letters, Journal of Applied Physics, ACS Applied Nano Materials, Chemistry of Materials, and Physica Status Solidi.

Supervising and training experience:

Supervisor in PhD Thesis:

2020 – 2023 Wenliang Zhang. Integrating van der Waals materials-based devices on paper for electronics and optoelectronics. UAM (2020-2023). Supervisors: A. Castellanos-Gomez and Y. Xie. Current position: Associate Professor at Shaanxi University of Science and Technology (Xi'an, China).

2024 – 2028 Ying Zhang (ongoing). TBD. UAM (2024-2028). Supervisors: A. Castellanos-Gomez and Y. Xie.

Supervisor in Master Thesis (Please note that Master's theses in China typically span a **three-year period**, which differs significantly from the standard duration of Master's programs in Spain.**):**

2025 – 2028 Jiahao Kang (ongoing). TBD. XDU (2025-2028). Supervisor: Y. Xie.

2023 – 2026 Qianjie Lei (ongoing). "Artificial Intelligence Assisted Controlled Synthesis, Straining and Devices of Twisted Bilayer MoS_2". XDU (2023-2026). Supervisor: Y. Xie.

2023 – 2026 Yang Liu (ongoing). "Preparation and Ferromagnetic Properties of InMnTe Ferromagnetic Semiconductors". XDU (2023-2026). Supervisor: Y. Xie.

2022 – 2025 Xiaolong He. "Research on Layer Number and Electrical Property Characterization of Molybdenum Disulfide Materials Based on Microcontroller" XDU (2022-2025) Supervisor: Y. Xie

2022 – 2025 Kexin He "Preparation of van der Waals Materials and the Reconfigurable Spectroscopic Devices Based on an All-Dry Abrasive Deposition Method" XDU (2022-2025) Supervisor: Y. Xie

2022 – 2025 Yizhe Xue. "Controlled Synthesis and Optoelectronic Properties of Twisted MoS_2" XDU (2022-2025) Supervisor: Y. Xie

2021 – 2024 Haitao Yang. "Study on the Identification of Layer Number and Interlayer Twist Angle in MoS_2" XDU (2021-2024) Supervisor: Y. Xie.

2021 – 2024 Ziwei Dang. "Controllable Preparation of Two-dimensional $InTe_{x(x=1, 1.5)}$ and the Study of Photoelectric Detection Performance" XDU (2021-2024) Supervisor: Y. Xie.

2020 – 2023 Wenshuai Hu. "Strain and Device Research of Transition Metal Dichalcogenides" XDU (2020-2023) Supervisor: Y. Xie

2019 – 2022 Chenyang Liu. "Study on Strain Regulation and Device of Molybdenum Disulfide" XDU (2019-2022) Supervisor: Y. Xie.

2018 – 2021 Guanfei Wang. "Investigations on Enhancement-mode and Depletion-mode β-Ga_2O_3 Field-Effect Transistors" XDU (2018-2021). Supervisor: Y. Xie.

2009 – 2010 Manfred Madel. "Growth and Characterization of Patterned ZnO Nanopillars" Ulm University (2009-2010, 6 month). Supervisors: K. Thonke and Y. Xie

2008 – 2009 Thilo Zoberbier. "Growth and Characterization of ZnO Film" Ulm University (2008-2009, 6 month). Supervisors: K. Thonke and Y. Xie

2008 – 2009 Reinhard Frey. "Growth and Characterization of ZnO Nanopillars" Ulm University (2008-2009, 6 month). Supervisors: K. Thonke and Y. Xie

Supervisor in Bachelor Thesis:

Jun. 2026 Nuraili Nurikimu. "Intelligent-Assisted CVD Growth of MoS_2: Thickness Control and Optical Characterization" XDU (2025-2026). Supervisor: Y. Xie.

Jun. 2026 Jianyi Zhang. “Design of Low-Cost Maskless Lithography System and Its Application in MoS_2 Device Fabrication” XDU (2025-2026). Supervisor: Y. Xie.

Jun. 2025 Deao Bao. “Angle-Controlled Fabrication of Bilayer Molybdenum Disulfide” XDU (2024-2025). Supervisor: Y. Xie.

Jun. 2025 Weitao Liang. “Microcontroller-Based Electrical Performance Testing System for Molybdenum Disulfide” XDU (2024-2025). Supervisor: Y. Xie.

Jun. 2024 Hongzhi Zhu. “Research on Deep Learning-Based Automatic Identification of Layer Number and Twist Angle in CVD-Grown MoS_2” XDU (2023-2024). Supervisor: Y. Xie.

Jun. 2024 Jinyu Chi. “Research on Intelligent Temperature Acquisition Systems Based on Industrial Internet of Things” XDU (2023-2024). Supervisor: Y. Xie.

Jun. 2023 Liang Guan. “Deep Learning-Based Identification of Bilayer MoS_2 Materials” XDU (2022-2023). Supervisor: Y. Xie.

Jun. 2022 Xiaolong He. “Preparation, Characterization, Devices, and Strain Engineering Control of Two-Dimensional Semiconductors” XDU (2021-2022). Supervisor: Y. Xie.

Jun. 2022 Yunqi Mou. “Design of On-Chip Memory Devices Based on Chalcogenide Phase-Change Materials” XDU (2021-2022). Supervisor: Y. Xie.

Jun. 2022 Lei Guo. “Machine Learning-Based Identification of Thickness in Ultrathin Semiconductor Materials” XDU (2021-2022). Supervisor: Y. Xie.

Jun. 2022 Yunming Yao. “Fabrication and Control of Novel Ultra-Wide Bandgap Semiconductor Quantum Light Sources” XDU (2021-2022). Supervisor: Y. Xie.

Jun. 2021 Aiying Peng. “Strain Engineering Control of Two-Dimensional Semiconductor Materials for Microelectromechanical Systems” XDU (2020-2021). Supervisor: Y. Xie.

Jun. 2021 Hangdong Wei. “Fabrication of Monolayer Wrinkled Two-Dimensional Transition Metal Dichalcogenides and Their Device Applications” XDU (2020-2021). Supervisor: Y. Xie.

Jun. 2021 Zhengkun Li. “Study of Atomically Thin Two-Dimensional Semiconductor MoS_2 and Its Strain Engineering Control” XDU (2020-2021). Supervisor: Y. Xie.

Jun. 2021 Haoxin Li. “Research on Novel Ultra-Wide Bandgap Semiconductor Gallium Oxide ED Mode Electronic Devices” XDU (2020-2021). Supervisor: Y. Xie.

Jun. 2020 Dongbo Sun. “Stress-Controlled Nanoscale Electromechanical Systems on Microelectromechanical Systems (MEMS) Chips” XDU (2019-2020). Supervisor: Y. Xie.

Jun. 2020 Weifan Zhou. “Force-Magnetic Sensing Electronic Flexible Skin” XDU (2019-2020). Supervisor: Y. Xie.

Jun. 2020 Yaqun Ma. “Novel Wide-Bandgap Semiconductor Gallium Oxide and Its Devices” XDU (2019-2020). Supervisor: Y. Xie.

Jun. 2020 Shengjun Zhou. “Research on Novel Two-Dimensional Semiconductor Optical Memory” XDU (2019-2020). Supervisor: Y. Xie.

Jun. 2017 Jinjin Li. “CVD Growth of Two-Dimensional Transition Metal Dichalcogenides” XDU (2016-2017). Supervisor: Y. Xie.

Jun. 2017 Xinxin Yu. “Research on Transfer Techniques for Two-Dimensional Transition Metal Dichalcogenides” XDU (2016-2017). Supervisor: Y. Xie.

Jun. 2017 Yu Xia. “Characterization of the Properties of Transition Metal Sulfides” XDU (2016-2017). Supervisor: Y. Xie.

Daily supervision and training of researchers:

2024-2025 Qianqian Wu. ICMM-CSIC. Supervisors: A. Castellanos-Gomez and Y. Xie. (12 months visiting PhD Student of the CSC)

2021-2022 Valentino Jadriško, ICMM-CSIC. Supervisors: A. Castellanos-Gomez and Y. Xie. (4 weeks visiting PhD Student of the ITN-2Exciting Training)

2021-2022 Irantzu Landa-Garcia, ICMM-CSIC. Supervisors: A. Castellanos-Gomez and Y. Xie. (4 weeks visiting PhD Student of the ITN-2Exciting Training)

2019-2022 Yan Bai. “Strain Engineering of Controlling Atomic Layer Thickness WSe2” XDU (2019-2022, three years master) Supervisors: P. Li and Y. Xie

2017-2019 Xuqian Zheng, Case Western Reserve University. Supervisors: P. Feng and Y. Xie (Two years of training)

2015-2017 Zhan Wang, Xidian University. Supervisors: X. Ma and Y. Xie (Two years of training)

2015-2018 Ruixue Wu. “Study of Growth, Heterojunction Preparation and Devices Application of Monolayer MoS_2” XDU (2015-2018, three years master). Supervisors: X. Ma and Y. Xie

2015-2018 Tang Nan. “Synthesis of Large-Area WS_2 and Heterojunction for Application” XDU (2015-2018, three years master). Supervisors: X. Ma and Y. Xie

Teaching and outreach experience:

Teaching

- Fronteras en Ciencia de Materiales Fabricación de nanodispositivos con materiales 2D (Graduate Course at: ICMM-CSIC,4 hours)
- Python Programming and Machine Learning Hands-on Workshop

  (Research-oriented training workshop, ICMM–CSIC, 8 hours; co-organizer and instructor)
- AI for Scientific Problems

  (Undergraduate Course, Open to All Students at Xidian University, 16 hours, In English)
- AI for Materials Science

  (Undergraduate Course, Open to All Students at Xidian University, 16 hours)
- Disruptive Semiconductor Technologies.

  (Undergraduate Course, Open to All-Students at Xidian University,16 hours)
- Semiconductor Processing

  (Undergraduate Course for Bachelor of Materials Science at Xidian University, 32 hours)
- Crystal Growth and Design

  (Graduate Course for Master of Materials Science at Xidian University, 48 hours)

Publication of Teaching Paper

1. Yang Liu, Qianjie Lei, Xiaolong He, Yizhe Xue, Kexin He, Haitao Yang, Yong Wang, Xian Zhang, Li Yang, Yichun Zhou*, Ruiqi Hu, **Yong Xie***. "Building an affordable self-driving lab: Practical machine learning experiments for physics education using Internet-of-Things" *APL Machine Learning* 3, 046105 (2025). DOI: 10.1063/5.0283529
2. **Yong Xie***, Gulsum Ersu, Thomas Pucher, Sruthi Kuriakose, Wenliang Zhang, Abdullah M Al-Enizi, Hamad AH Albrithen, Ayman Nafady, Rudolf Bratschitsch, Joshua O Island, Andres Castellanos-Gomez*. "Making exciton physics easy and affordable", European Journal of Physics 44 (5), 055501 (2023). DOI: 10.1088/1361-6404/ace748