

Kostya S. Novoselov
LIST OF MAIN PUBLICATIONS

(refereed papers and patents only)

LAST UPDATED April 2024

1. K. S. Novoselov, and Q. Li
"Learning physical laws from observations of complex dynamics"
Nature Computational Science **4**(1), 9-10 (2024).
2. M. Liu, J. Wei, L. Qi, J. An, X. Liu, Y. Li, Z. Shi, D. Li, K. S. Novoselov, C.-W. Qiu, and S. Li
"Photogating-assisted tunneling boosts the responsivity and speed of heterogeneous WSe₂/Ta₂NiSe₅ photodetectors"
Nat. Commun. **15**(1), 141 (2024).
3. G. A. Ermolaev, K. V. Voronin, A. N. Toksumakov, D. V. Grudinin, I. M. Fradkin, A. Mazitov, A. S. Slavich, M. K. Tatmyshevskiy, D. I. Yakubovsky, V. R. Solovey, R. V. Kirtaev, S. M. Novikov, E. S. Zhukova, I. Kruglov, A. A. Vyshnevyy, D. G. Baranov, D. A. Ghazaryan, A. V. Arsenin, L. Martin-Moreno, V. S. Volkov, and K. S. Novoselov
"Wandering principal optical axes in van der Waals triclinic materials"
Nat. Commun. **15**(1), 1552 (2024).
4. X. Chen, B. W. Soh, Z.-E. Ooi, E. Vissol-Gaudin, H. Yu, K. S. Novoselov, K. Hippalgaonkar, and Q. Li
"Constructing custom thermodynamics using deep learning"
Nature Computational Science **4**(1), 66-85 (2024).
5. Z. J. Li, P. Lyu, Z. L. Chen, D. D. Guan, S. Yu, J. P. Zhao, P. R. Huang, X. Zhou, Z. Z. Qiu, H. Y. Fang, M. Hashimoto, D. H. Lu, F. Song, K. P. Loh, Y. Zheng, Z. X. Shen, K. S. Novoselov, and J. Lu
"Beyond conventional charge density wave for strongly enhanced 2D superconductivity in 1H-TaS₂ superlattices"
Adv. Mater. 2312341 (2024).
6. X. F. Cai, M. Li, C. Chen, R. J. Du, Z. J. Guo, P. Wang, G. D. Ma, X. L. Wu, Z. Y. Wang, Y. Q. Han, F. Z. Lian, J. K. Xiao, S. Q. Jiang, L. Wang, A. S. Mayorov, L. B. Gao, K. S. Novoselov, and G. L. Yu
"Blood for graphene production"
ACS Appl. Nano Mater. **7**(7), 8238-46 (2024).
7. J. H. Bong, S. Grebenchuk, K. G. Nikolaev, C. P. T. Chee, K. Yang, S. Y. Chen, D. Baranov, C. R. Woods, D. V. Andreeva, and K. S. Novoselov
"Graphene oxide-DNA/graphene oxide-PDDA sandwiched membranes with neuromorphic function"
Nanoscale Horiz. **9**, 863-72 (2024).
8. A. V. Meshkov, A. A. Nikitina, T. A. Aliev, V. S. Gromov, S. Y. Chen, K. Yang, Q. Wang, K. S. Novoselov, D. V. Andreeva, and E. V. Skorb
"Robotization of synthesis and analysis process of graphene oxide-based membrane"
Adv. Intell. Syst. 2300655 (2024).
9. K. V. Voronin, A. N. Toksumakov, G. A. Ermolaev, A. S. Slavich, M. K. Tatmyshevskiy, S. M. Novikov, A. A. Vyshnevyy, A. V. Arsenin, K. S. Novoselov, D. A. Ghazaryan, V. S. Volkov, and D. G. Baranov
"Chiral photonic super-crystals based on helical van der Waals homostructures"
Laser Photon. Rev. 2301113 (2024).
10. A. S. Slavich, G. A. Ermolaev, M. K. Tatmyshevskiy, A. N. Toksumakov, O. G. Matveeva, D. V. Grudinin, K. V. Voronin, A. Mazitov, K. V. Kravtsov, A. V. Syuy, D. M. Tsybarenko, M. S. Mironov, S.

M. Novikov, I. Kruglov, D. A. Ghazaryan, A. A. Vyshnevyy, A. V. Arsenin, V. S. Volkov, and K. S. Novoselov

"Exploring van der Waals materials with high anisotropy: geometrical and optical approaches"

Light-Sci. Appl. **13**(1), 68 (2024).

11. S. Grebenchuk, C. McKeever, M. Grzeszczyk, Z. L. Chen, M. Siskins, A. R. C. McCray, Y. Li, A. K. Petford-Long, C. M. Phatak, D. Ruihuan, L. Zheng, K. S. Novoselov, E. J. G. Santos, and M. Koperski
"Topological spin textures in an insulating van der Waals ferromagnet"
Adv. Mater. 2311949 (2024).
12. A. Catanzaro, A. Genco, C. Louca, D. A. Ruiz-Tijerina, D. J. Gillard, L. Sortino, A. Kozikov, E. M. Alexeev, R. Pisoni, L. Hague, K. Watanabe, T. Taniguchi, K. Ensslin, K. S. Novoselov, V. Fal'ko, and A. I. Tartakovskii
"Resonant band hybridization in alloyed transition metal dichalcogenide heterobilayers"
Adv. Mater. 2309644 (2024).
13. K. Shein, E. Zharkova, M. Kashchenko, A. Kolbatova, A. Lyubchak, L. Elesin, E. Nguyen, A. Semenov, I. Charaev, A. Schilling, G. Goltsman, K. S. Novoselov, I. Gayduchenko, and D. A. Bandurin
"Fundamental limits of few-layer NbSe₂ microbolometers at Terahertz frequencies"
Nano Lett. **24**(7), 2282-88 (2024).
14. Q. Liu, W. Xu, X. X. Li, T. Y. Zhang, C. B. Qin, F. Luo, Z. H. Zhu, S. Q. Qin, M. J. Zhu, and K. S. Novoselov
"Electrically-driven ultrafast out-of-equilibrium light emission from hot electrons in suspended graphene/hBN heterostructures"
Int. J. Extreme Manuf. **6**(1), 015501 (2024).
15. Y. F. Jing, S. M. Zhou, J. X. Liu, H. C. Yang, J. Q. Liang, L. Y. Peng, Z. Y. Li, Y. P. Xia, H. Z. Zhang, F. Xu, L. X. Sun, K. S. Novoselov, and P. R. Huang
"Unveiling the destabilization of sp³ and sp² bonds in transition metal-modified borohydrides to improve reversible dehydrogenation and rehydrogenation"
J. Colloid Interface Sci. **661**(185-95) (2024).
16. M. S. Chen, M. Trubyanov, P. X. Zhang, D. Rodríguez-San-Miguel, F. Zamora, K. S. Novoselov, and D. Andreeva
"Control of gas selectivity and permeability through COF-GO composite membranes for sustainable decarbonization and hydrogen production"
Carbon **219**(118855) (2024).
17. X. Y. Zhou, T. Leng, K. W. Pan, Y. Liu, Z. R. Zhang, J. S. Li, K. S. Novoselov, and Z. R. Hu
"A sustainable approach towards printed graphene ink for wireless RFID sensing applications"
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18. X. Chen, Y. Qin, Y. Zhu, X. Pan, Y. Wang, H. Ma, R. Wang, C. D. Easton, Y. Chen, C. Tang, A. Du, A. Huang, Z. Xie, X. Zhang, G. P. Simon, M. M. Banaszak Holl, X. Lu, K. Novoselov, and H. Wang
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"High-mobility compensated semimetals, orbital magnetization, and Umklapp scattering in bilayer graphene moire superlattices"
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20. T. Latychevskaia, C. R. Woods, Y. B. Wang, M. Holwill, E. Prestat, S. Mustafi, S. J. Haigh, and K. S. Novoselov
"Potentials of individual atoms by convergent beam electron diffraction"
Carbon **201**(244-50 (2023)).
21. D. A. Mylnikov, E. I. Titova, M. A. Kashchenko, I. V. Safonov, S. S. Zhukov, V. A. Semkin, K. S. Novoselov, D. A. Bandurin, and D. A. Svintsov
"Terahertz photoconductivity in bilayer graphene transistors: evidence for tunneling at gate-induced junctions"
Nano Lett. **23**(1), 220-26 (2023).
22. M. S. Chen, M. Trubyanov, P. X. Zhang, Q. Wang, Z. L. Li, K. S. Novoselov, and D. V. Andreeva
"Comprehensive characterization of gas diffusion through graphene oxide membranes"
J. Membr. Sci. **676**(121583 (2023)).
23. J. X. Wei, Y. Chen, Y. Li, W. Li, J. S. Xie, C. Lee, K. S. Novoselov, and C. W. Qiu
"Geometric filterless photodetectors for mid-infrared spin light"
Nat. Photonics **17**(2), 171-78 (2023).
24. D. Andreeva-Baeumler, and K. Novoselov
"Method for fabricating e.g. graphene oxide paper, for e.g. acoustic transducing, involves flowing solution of dimensional materials through curved polymer template to form 2D multilayers, and separating 2D multi-layered layers from template", edited by (Univ Singapore Nat, 2023).
25. R. Song, B. Mao, Z. Wang, Y. Hui, N. Zhang, R. Fang, J. Zhang, Y. Wu, Q. Ge, K. S. Novoselov, and D. He
"Comparison of copper and graphene-assembled films in 5G wireless communication and THz electromagnetic-interference shielding"
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26. Z. Jin, Q. Ge, K. Novoselov, and Z. Li
"Molybdenum disulfide coating for fireproof flame-retardant cotton fabrics comprises molybdenum disulfide ink comprising molybdenum disulfide, tannic acid and solvent, where solvent is isopropanol and water", edited by (Chongqing Nuojiang 2d Materials Inst Co, 2023).
27. T. Li, M. Lin, Z. Hu, K. Zheng, G. Vignale, K. Kawaguchi, A. H. Castro Neto, K. S. Novoselov, and S. Yan
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28. Q. Qin, W. Q. Cao, D. Zhaxi, X. Y. Chen, D. V. Andreeva, K. F. Chen, S. Yang, H. Tian, M. Shaker, Z. Jin, and K. S. Novoselov
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"Ultralow-noise Terahertz detection by p-n Junctions in gapped bilayer graphene"

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Nano-Micro Letters **15**(1), 35 (2023).
32. P. Kumar, H. Kim, S. Tripathy, K. Watanabe, T. Taniguchi, K. S. Novoselov, and D. Kotekar-Patil
"Excited state spectroscopy and spin splitting in single layer MoS₂ quantum dots"
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"van der Waals materials for overcoming fundamental limitations in photonic integrated circuitry"
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"Ultrafast exciton fluid flow in an atomically thin MoS₂ semiconductor"
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"High-efficiency X-ray sensing with recyclable perovskite-graphene heterostructured transistors"
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"Teaching computing for complex problems in civil engineering and geosciences using big data and machine learning: synergizing four different computing paradigms and four different management domains"
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"Research in computing-intensive simulations for nature-oriented civil-engineering and related scientific fields, using machine learning and big data: an overview of open problems"
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"pH-dependent water permeability switching and its memory in MoS₂ membranes"
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