List of Publications

Journals

1. **S. Saini**, A. Dwivedi, A. Lodhi, A. Khandelwal, and S. P. Tiwari, "Resistive switching behavior of TiO2/(PVP:MoS2) nanocomposite hybrid bilayer in rigid and flexible RRAM devices," *Memories - Materials, Devices, Circuits and Systems,* vol. 4, p. 100029, 2023/07/01/ 2023, doi: 10.1016/j.memori.2023.100029.
2. **S. Saini**, A. Lodhi, A. Dwivedi, A. Khandelwal, and S. P. Tiwari, "Enhanced Resistive Switching in Flexible Hybrid RRAM Devices With PVK:MoS2/TiO2Bilayer," *IEEE Transactions on Electron Devices,* Article vol. 70, no. 1, pp. 53-58, 2023, doi: 10.1109/TED.2022.3221355.
3. **S. Saini**, A. Lodhi, A. Dwivedi, A. Khandelwal, and S. P. Tiwari, "Comprehensive Investigation of Shelf Life and Performance of Flexible Hybrid RRAM Devices With PVK:MoS2/TiO2 Bilayer," *IEEE Transactions on Electron Devices,* Article pp. 1-7, 2024, doi: 10.1109/TED.2024.3383408.
4. A. Dwivedi, A. Lodhi, **S. Saini**, H. Agarwal, and S. P. Tiwari, "Fabrication and Modeling of Flexible High-Performance Resistive Switching Devices With Biomaterial Gelatin/Ultrathin HfOx Hybrid Bilayer," *IEEE Transactions on Electron Devices,* Article vol. 69, no. 11, pp. 6423-6429, 2022, doi: 10.1109/TED.2022.3206255.
5. A. Dwivedi, **S. Saini**, A. Lodhi, H. Agarwal, and S. P. Tiwari, "Flexible resistive memory device with egg-albumen/HfOx hybrid bilayer: fabrication and modeling of its switching variations," *Flexible and Printed Electronics,* Article vol. 9, no. 2, 2024, Art no. 025004, doi: 10.1088/2058-8585/ad39fa.
6. A. Lodhi, A. Dwivedi, **S. Saini**, N. Jingar, A. Khandelwal, and S. P. Tiwari, "Radiation-Hardened ReRAM Devices for Flexible Electronics," *IEEE Journal on Flexible Electronics,* vol. 2, no. 5, pp. 402-407, 2023, doi: 10.1109/JFLEX.2023.3289481.
7. A. Lodhi, **S. Saini**, A. Dwivedi, A. Khandelwal, and S. P. Tiwari, "Bipolar resistive switching properties of TiO x/graphene oxide doped PVP based bilayer ReRAM," *Journal of Micromechanics and Microengineering,* Article vol. 32, no. 4, 2022, Art no. 044001, doi: 10.1088/1361-6439/ac521f.
8. S. Birara, **S. Saini**, M. Majumder, P. Lama, S. P. Tiwari, and R. K. Metre, "Design and synthesis of a solution-processed redox-active bis(formazanate) zinc complex for resistive switching applications," *Dalton Transactions,* Article vol. 52, no. 48, pp. 18429-18441, 2023, doi: 10.1039/d3dt02809g.
9. **S. Saini,** A. Dwivedi, A. Lodhi, A. Khandelwal, and S. P. Tiwari, "Multilevel Resistive Switching in Flexible RRAM Devices with a PVP:MoSe2 Active Layer," *ACS Applied Electronic Materials,* Article vol. 6, no. 9, pp. 6718-6725, 2024, doi: 10.1021/acsaelm.4c01130.
10. S. Birara, **S. Saini,** M. Majumder, S. P. Tiwari, and R. K. Metre, "A solution-processable benzothiazole-substituted formazanate zinc(ii) complex designed for a robust resistive memory device," *Dalton Transactions,* Article vol. 53, no. 36, pp. 15338-15349, 2024, doi: 10.1039/d4dt01640h.

Conferences

1 **S. Saini**, A. Lodhi, A. Dwivedi, A. Khandelwal, and S. P. Tiwari, "Resistive Switching Behavior of TiO2/(PVP:MoS2) Nanocomposite Bilayer Hybrid RRAM," in *Communications in Computer and Information Science*, 2022, vol. 1687 CCIS, pp. 478-485, doi: 10.1007/978-3-031-21514-8_39.

2 **S. Saini**, A. Dwivedi, A. Lodhi, A. Khandelwal, and S. P. Tiwari, "Flexible Forming Free Resistive Memory Device with 2D Material MoSe2as Switching Layer," in *7th IEEE Electron Devices Technology and Manufacturing Conference: Strengthen the Global Semiconductor Research Collaboration After the Covid-19 Pandemic, EDTM 2023*, 2023, doi: 10.1109/EDTM55494.2023.10103025.

3 A. Dwivedi, A. Lodhi, **S. Saini**, H. Agarwal, and S. P. Tiwari, "Albumen Based Flexible Memory Device for Bio-Sustainable Electronics," in *7th IEEE Electron Devices Technology and Manufacturing*

Conference: Strengthen the Global Semiconductor Research Collaboration After the Covid-19 Pandemic, EDTM 2023, 2023, doi: 10.1109/EDTM55494.2023.10102986.

4 A. Dwivedi, **S. Saini**, A. Lodhi, H. Agarwal, and S. P. Tiwari, "Effect of Temperature Induced Phase Variation in ALD TiO2Dielectric on the Switching Behaviour of RRAM Devices," in *2022 IEEE International Conference on Emerging Electronics, ICEE 2022*, 2022, doi: 10.1109/ICEE56203.2022.10117866.

5 A. Lodhi, A. Dwivedi, **S. Saini**, A. Khandelwal, and S. P. Tiwari, "Exploration of Chitosan as an Active Material in Eco-friendly ReRAM Devices," in *2023 IEEE Nanotechnology Materials and Devices Conference, NMDC 2023*, 2023, pp. 532-535, doi: 10.1109/NMDC57951.2023.10343543.

6 A. Dwivedi, A. Lodhi, **S. Saini**, H. Agarwal, and S. Prakash Tiwari, "Flexible RRAM with Natural Gelatin Exhibiting High Current On/Off Ratio and Retention," in *4th IEEE International Flexible Electronics Technology Conference, IFETC 2022 - Proceeding*, 2022, doi: 10.1109/IFETC53656.2022.9948508.

7 S. Chattaraj, A. Dwivedi, G. Konwar, A. Lodhi, **S. Saini**, and S. P. Tiwari, "High-Performance Bio-Memristive Devices with Natural Egg Albumen as a Switching Layer," in *Proceedings of AM-FPD 2022 - 29th International Workshop on Active-Matrix Flatpanel Displays and Devices: TFT Technologies and FPD Materials*, 2022, pp. 181-184, doi: 10.23919/AM-FPD54920.2022.9851302.

References

Abbas, H., Ali, A., Li, J., Tun, T. T. T. & Ang, D. S. (2023). Forming-Free, Self-Compliance WTe2-Based Conductive Bridge RAM With Highly Uniform Multilevel Switching for High-Density Memory. *IEEE Electron Device Letters,* 44**,** 253-256.

Acharyya, D., Hazra, A. & Bhattacharyya, P. (2014). A journey towards reliability improvement of TiO2 based Resistive Random Access Memory: A review. *Microelectronics Reliability,* 54**,** 541-560.

Ahmad, M. W., Soren, K., Dey, B., Khan, M. S. & Choudhury, A. (2021). Synergistic reinforcement effect of 3D graphene@multi-walled carbon nanotube hybrid nanofiller in enhancing the electrical, EMI-shielding, and mechanical properties of polyethersulfone. *International Journal of Polymer Analysis and Characterization,* 26**,** 754-771.

Ali, A., Abbas, H., Hussain, M., Jaffery, S. H. A., Hussain, S., Choi, C. & Jung, J. (2022). Thickness-dependent monochalcogenide GeSe-based CBRAM for memory and artificial electronic synapses. *Nano Research,* 15**,** 2263-2277.

Ali, S., Bae, J., Lee, C. H., Choi, K. H. & Doh, Y. H. (2015). All-printed and highly stable organic resistive switching device based on graphene quantum dots and polyvinylpyrrolidone composite. *Organic Electronics,* 25**,** 225-231.

Ali, S., Bae, J., Lee, C. H., Shin, S. & Kobayashi, N. P. (2017). Ultra-low power non-volatile resistive crossbar memory based on pull up resistors. *Organic Electronics,* 41**,** 73-78.

An, H., Lee, Y. H., Lee, J. H., Wu, C., Koo, B. M. & Kim, T. W. (2020). Highly Stable and Flexible Memristive Devices Based on Polyvinylpyrrolidone: WS2 Quantum Dots. *Scientific Reports,* 10.

Aziz, T., Wei, S., Sun, Y., Ma, L. P., Pei, S., Dong, S., Ren, W., Liu, Q., Cheng, H. M. & Sun, D. M. (2021). High-performance flexible resistive random access memory devices based on graphene oxidized with a perpendicular oxidation gradient. *Nanoscale,* 13**,** 2448-2455.

Bala, A., So, B., Pujar, P., Moon, C. & Kim, S. (2023). In Situ Synthesis of Two-Dimensional Lateral Semiconducting-Mo:Se//Metallic-Mo Junctions Using Controlled Diffusion of Se for High-Performance Large-Scaled Memristor. *ACS Nano,* 17**,** 4296-4305.

Bessonov, A. A., Kirikova, M. N., Petukhov, D. I., Allen, M., Ryhänen, T. & Bailey, M. J. A. (2015). Layered memristive and memcapacitive switches for printable electronics. *Nature Materials,* 14**,** 199-204.

Bhattacharjee, S., Sarkar, P. K., Prajapat, M. & Roy, A. (2017). Electrical reliability, multilevel data storage and mechanical stability of MoS2-PMMA nanocomposite-based non-volatile memory device. *Journal of Physics D: Applied Physics,* 50.

Bhatti, S., Sbiaa, R., Hirohata, A., Ohno, H., Fukami, S. & Piramanayagam, S. N. (2017). Spintronics based random access memory: a review. *Materials Today,* 20**,** 530-548.

Biswas, S., Paul, A. D., Das, P., Tiwary, P., Edwards, H. J., Dhanak, V. R., Mitrovic, I. Z. & Mahapatra, R. (2021). Impact of AlOy Interfacial Layer on Resistive Switching Performance of Flexible HfO_x/AlOy ReRAMs. *IEEE Transactions on Electron Devices,* 68**,** 3787-3793.

Boehme, M. & Charton, C. (2005). Properties of ITO on PET film in dependence on the coating conditions and thermal processing. *Surface and Coatings Technology,* 200**,** 932-935.

Cai, Y., Tan, J., Yefan, L., Lin, M. & Huang, R. (2016). A flexible organic resistance memory device for wearable biomedical applications. *Nanotechnology,* 27.

Chang, K. C., Chang, T. C., Tsai, T. M., Zhang, R., Hung, Y. C., Syu, Y. E., Chang, Y. F., Chen, M. C., Chu, T. J., Chen, H. L., Pan, C. H., Shih, C. C., Zheng, J. C. & Sze, S. M. (2015). Physical and chemical mechanisms in oxide-based resistance random access memory. *Nanoscale Research Letters,* 10.

Chen, S., Mahmoodi, M. R., Shi, Y., Mahata, C., Yuan, B., Liang, X., Wen, C., Hui, F., Akinwande, D., Strukov, D. B. & Lanza, M. (2020). Wafer-scale integration of two-dimensional materials in high-density memristive crossbar arrays for artificial neural networks. *Nature Electronics,* 3**,** 638-645.

Chen, Z., Yu, Y., Jin, L., Li, Y., Li, Q., Li, T., Li, J., Zhao, H., Zhang, Y., Dai, H. & Yao, J. (2020). Broadband photoelectric tunable quantum dot based resistive random access memory. *Journal of Materials Chemistry C,* 8**,** 2178-2185.

Chen, Z., Zhang, Y., Yu, Y., Li, Y., Li, Q., Li, T., Zhao, H., Li, Z., Bing, P. & Yao, J. (2022). Resistive switching memory based on polyvinyl alcohol-graphene oxide hybrid material for the visual perception nervous system. *Materials & Design,* 223**,** 111218.

Choi, B. J., Torrezan, A. C., Strachan, J. P., Kotula, P. G., Lohn, A. J., Marinella, M. J., Li, Z., Williams, R. S. & Yang, J. J. (2016). High-Speed and Low-Energy Nitride Memristors. *Advanced Functional Materials,* 26**,** 5290-5296.

Choi, J. Y., Jin, S. W., Kim, D. M., Song, I. H., Nam, K. N., Park, H. J. & Chung, C. M. (2019). Enhancement of the mechanical properties of polyimide film by microwave irradiation. *Polymers,* 11.

Dai, M., Wang, J. & Zhang, Y. (2020). Improving water resistance of waterborne polyurethane coating with high transparency and good mechanical properties. *Colloids and Surfaces A: Physicochemical and Engineering Aspects,* 601.

Das, B., Bera, A., Samanta, M., Bera, S., Kalimuddin, S., Kundu, M., Gayen, S., Chattopadhyay, K. K. & Mondal, M. (2021). Resistive Switching in a MoSe2-Based Memory Device Investigated Using Conductance Noise Spectroscopy. *ACS Applied Electronic Materials,* 3**,** 3096-3105.

Deng, Y., Huang, P., Chen, B., Yang, X., Gao, B., Wang, J., Zeng, L., Du, G., Kang, J. & Liu, X. (2013). RRAM crossbar array with cell selection device: A device and circuit interaction study. *IEEE Transactions on Electron Devices,* 60**,** 719-726.

Ding, G., Zeng, K., Zhou, K., Li, Z., Zhou, Y., Zhai, Y., Zhou, L., Chen, X. & Han, S.-T. (2019). Configurable multi-state non-volatile memory behaviors in Ti3C2 nanosheets. *Nanoscale,* 11**,** 7102-7110.

Dlamini, Z. W., Vallabhapurapu, S., Wu, S., Mahule, T. S., Srivivasan, A. & Vallabhapurapu, V. S. (2022). Resistive switching memory based on chitosan/polyvinylpyrrolidone blend as active layers. *Solid State Communications,* 345**,** 114677.

Dutta, M., Senapati, A., Ginnaram, S. & Maikap, S. (2020). Resistive switching memory and artificial synapse by using Ti/MoS2 based conductive bridging cross-points. *Vacuum,* 176.

Dwivedi, A., Lodhi, A., Saini, S., Agarwal, H. & Tiwari, S. P. (2022). Fabrication and Modeling of Flexible High-Performance Resistive Switching Devices With Biomaterial Gelatin/Ultrathin HfOx Hybrid Bilayer. *IEEE Transactions on Electron Devices,* 69**,** 6423-6429.

Fan, F., Zhang, B., Cao, Y. & Chen, Y. (2017). Solution-processable poly(N-vinylcarbazole)-covalently grafted MoS2 nanosheets for nonvolatile rewritable memory devices. *Nanoscale,* 9**,** 2449-2456.

Feng, X., Huang, J., Ning, J., Wang, D., Zhang, J. & Hao, Y. (2023). A novel nonvolatile memory device based on oxidized Ti3C2Tx MXene for neurocomputing application. *Carbon,* 205**,** 365-372.

Fong, S. W., Neumann, C. M. & Wong, H. S. P. (2017). Phase-Change Memory - Towards a Storage-Class Memory. *IEEE Transactions on Electron Devices,* 64**,** 4374-4385.

Gao, W., Ota, H., Kiriya, D., Takei, K. & Javey, A. (2019). Flexible Electronics toward Wearable Sensing. *Accounts of Chemical Research,* 52**,** 523-533.

Ginnaram, S. & Maikap, S. (2021). Memristive and artificial synapse performance by using TiOx/Al2O3 interface engineering in MoS2-based metallic filament memory. *Journal of Physics and Chemistry of Solids,* 151.

Ginnaram, S., Qiu, J. T. & Maikap, S. (2020). Role of the Hf/Si Interfacial Layer on the High Performance of MoS2-Based Conductive Bridge RAM for Artificial Synapse Application. *IEEE Electron Device Letters,* 41**,** 709-712.

Han, P., Sun, B., Cheng, S., Yu, F., Jiao, B. & Wu, Q. (2016). Preparation of MoSe2 nano-islands array embedded in a TiO2 matrix for photo-regulated resistive switching memory. *Journal of Alloys and Compounds,* 664**,** 619-625.

Han, S. T., Zhou, Y. & Roy, V. A. L. (2013). Towards the development of flexible non-volatile memories. *Advanced Materials,* 25**,** 5425-5449.

Han, S. T., Zhou, Y., Yang, Q. D., Zhou, L., Huang, L. B., Yan, Y., Lee, C. S. & Roy, V. A. L. (2014). Energy-band engineering for tunable memory characteristics through controlled doping of reduced graphene oxide. *ACS Nano,* 8**,** 1923-1931.

He, C. L., Zhuge, F., Zhou, X. F., Li, M., Zhou, G. C., Liu, Y. W., Wang, J. Z., Chen, B., Su, W. J., Liu, Z. P., Wu, Y. H., Cui, P. & Li, R. W. (2009). Nonvolatile resistive switching in graphene oxide thin films. *Applied Physics Letters,* 95.

Ho Lee, M., Yeol Yun, D., Min Park, H. & Whan Kim, T. (2011). Flexible organic bistable devices based on [6,6]-phenyl-C85 butyric acid methyl ester clusters embedded in a polymethyl methacrylate layer. *Applied Physics Letters,* 99.

Hong, S. K., Kim, J. E., Kim, S. O., Choi, S. Y. & Cho, B. J. (2010). Flexible resistive switching memory device based on graphene oxide. *IEEE Electron Device Letters,* 31**,** 1005-1007.

Hosseini, N. R. & Lee, J. S. (2015). Biocompatible and Flexible Chitosan-Based Resistive Switching Memory with Magnesium Electrodes. *Advanced Functional Materials,* 25**,** 5586-5592.

Hua, Q., Wu, H., Gao, B., Zhang, Q., Wu, W., Li, Y., Wang, X., Hu, W. & Qian, H. (2019). Low-Voltage Oscillatory Neurons for Memristor-Based Neuromorphic Systems. *Global Challenges,* 3.

Hui, F., Grustan-Gutierrez, E., Long, S., Liu, Q., Ott, A. K., Ferrari, A. C. & Lanza, M. (2017). Graphene and Related Materials for Resistive Random Access Memories. *Advanced Electronic Materials,* 3**,** 1600195.

Iqbal, H. F., Ai, Q., Thorley, K. J., Chen, H., McCulloch, I., Risko, C., Anthony, J. E. & Jurchescu, O. D. (2021). Suppressing bias stress degradation in high performance solution processed organic transistors operating in air. *Nature Communications,* 12**,** 2352.

Irshad, M. S., Abbas, A., Qazi, H. H., Aziz, M. H., Shah, M., Ahmed, A. & Idrees, M. (2019). Role of point defects in hybrid phase TiO2 for resistive random-access memory (RRAM). *Materials Research Express,* 6.

Ishiwara, H. (2012). Ferroelectric random access memories. *Journal of Nanoscience and Nanotechnology,* 12**,** 7619-7627.

Jana, D., Roy, S., Panja, R., Dutta, M., Rahaman, S. Z., Mahapatra, R. & Maikap, S. (2015). Conductive-bridging random access memory: challenges and opportunity for 3D architecture. *Nanoscale Research Letters,* 10.

Jang, B. C., Seong, H., Kim, S. K., Kim, J. Y., Koo, B. J., Choi, J., Yang, S. Y., Im, S. G. & Choi, S. Y. (2016). Flexible Nonvolatile Polymer Memory Array on Plastic Substrate via Initiated Chemical Vapor Deposition. *ACS Applied Materials and Interfaces,* 8**,** 12951-12958.

Jang, J., Song, Y., Yoo, D., Cho, K., Kim, Y., Pak, J., Min, M. & Lee, T. (2015). Energy Consumption Estimation of Organic Nonvolatile Memory Devices on a Flexible Plastic Substrate. *Advanced Electronic Materials,* 1.

Jeong, H. Y., Kim, J. Y., Kim, J. W., Hwang, J. O., Kim, J. E., Lee, J. Y., Yoon, T. H., Cho, B. J., Kim, S. O., Ruoff, R. S. & Choi, S. Y. (2010). Graphene oxide thin films for flexible nonvolatile memory applications. *Nano Letters,* 10**,** 4381-4386.

Jeong, H. Y., Kim, Y. I., Lee, J. Y. & Choi, S.-Y. (2010). A low-temperature-grown TiO2-based device for the flexible stacked RRAM application. *Nanotechnology,* 21**,** 115203.

Jian, J., Feng, H., Dong, P., Chang, H., Vena, A. & Brice, S. (2022). Low-Operating-Voltage Resistive Switching Memory Based on the Interlayer-Spacing Regulation of MoSe2. *Advanced Electronic Materials,* 8.

Jin, S., Kwon, J. D. & Kim, Y. (2021). Statistical analysis of uniform switching characteristics of Ta2O5-based memristors by embedding in-situ grown 2D-MoS2 buffer layers. *Materials,* 14.

Jo, H., Ko, J., Lim, J. A., Chang, H. J. & Kim, Y. S. (2013). Organic nonvolatile resistive switching memory based on molecularly entrapped fullerene derivative within a diblock copolymer nanostructure. *Macromolecular Rapid Communications,* 34**,** 355-361.

Kaur, R., Singh, K. P. & Tripathi, S. K. (2022). Electrical, linear and non-linear optical properties of MoSe2/PVA nanocomposites as charge trapping elements for memory device applications. *Journal of Alloys and Compounds,* 905**,** 164103.

Kaur, R., Singh, K. P. & Tripathi, S. K. (2022). Preparation and incorporation of NiSe@MoSe2 nano arrays in PVA matrix for resistive switching memory. *Journal of Alloys and Compounds,* 925.

Khurana, G., Misra, P., Kumar, N. & Katiyar, R. S. (2014). Tunable power switching in nonvolatile flexible memory devices based on graphene oxide embedded with zno nanorods. *Journal of Physical Chemistry C,* 118**,** 21357-21364.

Kim, J. M. & Hwang, S. W. (2021). Bipolar resistive switching behavior of PVP-GQD/HfOx/ITO/ graphene hybrid flexible resistive random access memory. *Molecules,* 26.

Kim, S., Chen, J., Chen, Y. C., Kim, M. H., Kim, H., Kwon, M. W., Hwang, S., Ismail, M., Li, Y., Miao, X. S., Chang, Y. F. & Park, B. G. (2019). Neuronal dynamics in HfOx/AlOy-based homeothermic synaptic memristors with low-power and homogeneous resistive switching. *Nanoscale,* 11**,** 237-245.

Kim, S., Yarimaga, O., Choi, S. J. & Choi, Y. K. (2010). Highly durable and flexible memory based on resistance switching. *Solid-State Electronics,* 54**,** 392-396.

Kim, Y., Kim, M., Park, J. H., Shin, K. Y., Lee, S. S. & Jeon, W. (2021). Highly sustainable mechanical/electrical resistance switching behaviors via one-dimensional Ag/TiO2 core-shell resistive switchable materials in flexible composite. *Organic Electronics,* 88.

Kozicki, M. N. & Barnaby, H. J. (2016). Conductive bridging random access memory - Materials, devices and applications. *Semiconductor Science and Technology,* 31.

Kozicki, M. N., Park, M. & Mitkova, M. Nanoscale memory elements based on solid-state electrolytes. IEEE Transactions on Nanotechnology, 2005. 331-338.

Kumar, D., Chand, U., Siang, L. W. & Tseng, T. Y. (2020). High-Performance TiN/Al2O3/ZnO/Al2O3/TiN Flexible RRAM Device With High Bending Condition. *IEEE Transactions on Electron Devices,* 67**,** 493-498.

Kumar, M., Ban, D.-K., Kim, S. M., Kim, J. & Wong, C.-P. (2019). Vertically Aligned WS2 Layers for High-Performing Memristors and Artificial Synapses. *Advanced Electronic Materials,* 5**,** 1900467.

Kumar, S., Gautam, M. K., Yadav, S. & Mukherjee, S. (2023). Memcapacitive to Memristive Transition in Al/Y2O3/GZO Crossbar Array. *IEEE Transactions on Electron Devices,* 70**,** 3341-3346.

Lai, P. Y. & Chen, J. S. (2009). Influence of electrical field dependent depletion at metal-polymer junctions on resistive switching of poly(N-vinylcarbazole) (PVK)-based memory devices. *Organic Electronics,* 10**,** 1590-1595.

Lai, Y. C., Wang, Y. X., Huang, Y. C., Lin, T. Y., Hsieh, Y. P., Yang, Y. J. & Chen, Y. F. (2014). Rewritable, moldable, and flexible sticker-type organic memory on arbitrary substrates. *Advanced Functional Materials,* 24**,** 1430-1438.

Lanza, M., Wong, H. S. P., Pop, E., Ielmini, D., Strukov, D., Regan, B. C., Larcher, L., Villena, M. A., Yang, J. J., Goux, L., Belmonte, A., Yang, Y., Puglisi, F. M., Kang, J., Magyari-Köpe, B., Yalon, E., Kenyon, A., Buckwell, M., Mehonic, A., Shluger, A., Li, H., Hou, T. H., Hudec, B., Akinwande, D., Ge, R., Ambrogio, S., Roldan, J. B., Miranda, E., Suñe, J., Pey, K. L., Wu, X., Raghavan, N., Wu, E., Lu, W. D., Navarro, G., Zhang, W., Wu, H., Li, R., Holleitner, A., Wurstbauer, U., Lemme, M. C., Liu, M., Long, S., Liu, Q., Lv, H., Padovani, A., Pavan, P., Valov, I., Jing, X., Han, T., Zhu, K., Chen, S., Hui, F. & Shi, Y. (2019). Recommended Methods to Study Resistive Switching Devices. *Advanced Electronic Materials,* 5.

Lee, B.-H., Bae, H., Seong, H., Lee, D.-I., Park, H., Choi, Y. J., Im, S.-G., Kim, S. O. & Choi, Y.-K. (2015). Direct Observation of a Carbon Filament in Water-Resistant Organic Memory. *ACS Nano,* 9**,** 7306-7313.

Lee, J. H., Cho, K. & Kim, J. K. (2024). Age of Flexible Electronics: Emerging Trends in Soft Multifunctional Sensors. *Advanced Materials,* 36.

Lee, J. H., Park, S. P., Park, K. & Kim, H. J. (2020). Flexible and Waterproof Resistive Random-Access Memory Based on Nitrocellulose for Skin-Attachable Wearable Devices. *Advanced Functional Materials,* 30.

Lee, J. H., Wu, C., Sung, S., An, H. & Kim, T. W. (2019). Highly flexible and stable resistive switching devices based on WS2 nanosheets:poly(methylmethacrylate) nanocomposites. *Scientific Reports,* 9.

Lee, J. W. & Cho, W. J. (2017). Fabrication of resistive switching memory based on solution processed PMMA-HfOx blended thin films. *Semiconductor Science and Technology,* 32.

Lee, K. H., Ni, X., Lee, J. Y., Arafa, H., Pe, D. J., Xu, S., Avila, R., Irie, M., Lee, J. H., Easterlin, R. L., Kim, D. H., Chung, H. U., Olabisi, O. O., Getaneh, S., Chung, E., Hill, M., Bell, J., Jang, H., Liu, C., Park, J. B., Kim, J., Kim, S. B., Mehta, S., Pharr, M., Tzavelis, A., Reeder, J. T., Huang, I., Deng, Y., Xie, Z., Davies, C. R., Huang, Y. & Rogers, J. A. (2020). Mechano-acoustic sensing of physiological processes and body motions via a soft wireless device placed at the suprasternal notch. *Nature Biomedical Engineering,* 4**,** 148-158.

Lee, K. J., Lin, H. N., Pal, P. & Wang, Y. H. (2022). Resistive Switching in Biocompatible Glucose Films Doped With Honey for Highly Flexible Nonvolatile Memory Application. *IEEE Journal on Flexible Electronics,* 1**,** 207-213.

Li, G., Tan, F., Lv, B., Wu, M., Wang, R., Lu, Y., Li, X., Li, Z. & Teng, F. (2018). Thiol-modified MoS2 nanosheets as a functional layer for electrical bistable devices. *Optics Communications,* 406**,** 112-117.

Li, J. C., Zhang, C. & Shao, S. J. (2018). Effect of bottom electrode materials on resistive switching of flexible poly(N-vinylcarbazole) film embedded with TiO2 nanoparticles. *Thin Solid Films,* 664**,** 136-142.

Lin, C. C., Wu, H. Y., Lin, N. C. & Lin, C. H. Graphene-oxide-based resistive switching device for flexible nonvolatile memory application. Japanese Journal of Applied Physics, 2014.

Ling, H., Yi, M., Nagai, M., Xie, L., Wang, L., Hu, B. & Huang, W. (2017). Controllable Organic Resistive Switching Achieved by One-Step Integration of Cone-Shaped Contact. *Advanced Materials,* 29**,** 1701333.

Liu, K., Ouyang, B., Guo, X., Guo, Y. & Liu, Y. (2022). Advances in flexible organic field-effect transistors and their applications for flexible electronics. *npj Flexible Electronics,* 6.

Liu, S., Lu, N., Zhao, X., Xu, H., Banerjee, W., Lv, H., Long, S., Li, Q., Liu, Q. & Liu, M. (2016). Eliminating Negative-SET Behavior by Suppressing Nanofilament Overgrowth in Cation-Based Memory. *Advanced Materials,* 28**,** 10623-10629.

Liu, X., Yang, K., Zhao, S., Li, M., Qiao, W., Li, T., Zhang, S., Zheng, L., Su, L., Xu, J. & Bian, J. (2018). High Repetition Rate All-Solid-State Pulsed 2 μm Laser Based on Selenide Molybdenum Saturable Absorber. *IEEE Journal of Selected Topics in Quantum Electronics,* 24**,** 1-6.

Lodhi, A., Saini, S., Dwivedi, A., Khandelwal, A. & Tiwari, S. P. (2022). Bipolar resistive switching properties of TiO x/graphene oxide doped PVP based bilayer ReRAM. *Journal of Micromechanics and Microengineering,* 32.

Luo, Q., Xu, X., Liu, H., Lv, H., Gong, T., Long, S., Liu, Q., Sun, H., Banerjee, W., Li, L., Gao, J., Lu, N. & Liu, M. (2016). Super non-linear RRAM with ultra-low power for 3D vertical nano-crossbar arrays. *Nanoscale,* 8**,** 15629-15636.

Macdonald, W. A. 2015. Latest Advances in Substrates for Flexible Electronics. *Large Area and Flexible Electronics.*

Maikap, S. & Banerjee, W. (2020). In Quest of Nonfilamentary Switching: A Synergistic Approach of Dual Nanostructure Engineering to Improve the Variability and Reliability of Resistive Random-Access-Memory Devices. *Advanced Electronic Materials,* 6.

Midya, A., Gogurla, N. & Ray, S. K. (2015). Flexible and transparent resistive switching devices using Au nanoparticles decorated reduced graphene oxide in polyvinyl alcohol matrix. *Current Applied Physics,* 15**,** 706-710.

Murthe, S. S., Sreekantan, S. & Mydin, R. B. S. M. N. (2022). Study on the Physical, Thermal and Mechanical Properties of SEBS/PP (Styrene-Ethylene-Butylene-Styrene/Polypropylene) Blend as a Medical Fluid Bag. *Polymers,* 14.

Nagareddy, V. K., Barnes, M. D., Zipoli, F., Lai, K. T., Alexeev, A. M., Craciun, M. F. & Wright, C. D. (2017). Multilevel Ultrafast Flexible Nanoscale Nonvolatile Hybrid Graphene Oxide-Titanium Oxide Memories. *ACS Nano,* 11**,** 3010-3021.

Pan, F., Gao, S., Chen, C., Song, C. & Zeng, F. (2014). Recent progress in resistive random access memories: Materials, switching mechanisms, and performance. *Materials Science and Engineering R: Reports,* 83**,** 1-59.

Pan, S., Zhu, Z., Yu, H., Lan, W., Wei, B. & Guo, K. (2021). Switching the resistive memory behavior from binary to ternary logic via subtle polymer donor and molecular acceptor design. *Journal of Materials Chemistry C,* 9**,** 5643-5651.

Park, H., Ju, D., Mahata, C., Emelyanov, A., Koo, M. & Kim, S. (2024). Long- and Short-Term Memory Characteristics Controlled by Electrical and Optical Stimulations in InZnO-Based Synaptic Device for Reservoir Computing. *Advanced Electronic Materials***,** 2300911.

Park, J.-W., Moon, C.-J., Ju, Y.-M., Jang, Y.-R., Park, S. S. & Kim, H.-S. (2022). Depth Gradient Reduced Graphene Oxide Layer via Intense Pulsed Light Annealing Process for the Flexible Resistive Random Access Memory Device. *Advanced Electronic Materials,* 8**,** 2101018.

Park, Y. & Lee, J. S. (2017). Flexible Multistate Data Storage Devices Fabricated Using Natural Lignin at Room Temperature. *ACS Applied Materials and Interfaces,* 9**,** 6207-6212.

Paul, A. D., Biswas, S., Dalal, A., Mondal, A. & Mahapatra, R. (2022). Impact of Stack Engineering on HfO/Al:HfO-Based Flexible Resistive Memory Devices and Its Synaptic Characteristics. *IEEE Transactions on Electron Devices,* 69**,** 1842-1848.

Peng, Q., Wang, Z., Sa, B., Wu, B. & Sun, Z. (2016). Electronic structures and enhanced optical properties of blue phosphorene/transition metal dichalcogenides van der Waals heterostructures. *Scientific Reports,* 6.

Pham, K. N., Hoang, V. D., Tran, C. V. & Phan, B. T. (2016). TiO2 thin film based transparent flexible resistive switching random access memory. *Advances in Natural Sciences: Nanoscience and Nanotechnology,* 7.

Promjun, T., Rattana, T. & Pansila, P. P. (2022). Kinetic study on initial surface reaction of titanium dioxide growth using tetrakis(dimethylamino)titanium and water in atomic layer deposition process: Density functional theory calculation. *Chemical Physics,* 562.

Qian, K., Tay, R. Y., Nguyen, V. C., Wang, J., Cai, G., Chen, T., Teo, E. H. T. & Lee, P. S. J. A. F. M. (2016). Hexagonal boron nitride thin film for flexible resistive memory applications. 26**,** 2176-2184.

Raeis-Hosseini, N. & Lee, J. S. (2016). Controlling the Resistive Switching Behavior in Starch-Based Flexible Biomemristors. *ACS Applied Materials and Interfaces,* 8**,** 7326-7332.

Rao, Z., Wang, X., Mao, S., Qin, J., Yang, Y., Liu, M., Ke, C., Zhao, Y. & Sun, B. (2023). Flexible Memristor-Based Nanoelectronic Devices for Wearable Applications: A Review. *ACS Applied Nano Materials,* 6**,** 18645-18669.

Rehman, M. M., Siddiqui, G. U., Gul, J. Z., Kim, S.-W., Lim, J. H. & Choi, K. H. (2016). Resistive Switching in All-Printed, Flexible and Hybrid MoS2-PVA Nanocomposite based Memristive Device Fabricated by Reverse Offset. *Scientific Reports,* 6**,** 36195.

Ren, J., Liang, H., Li, J., Li, Y. C., Mi, W., Zhou, L., Sun, Z., Xue, S., Cai, G. & Zhao, J. S. (2022). Polyelectrolyte Bilayer-Based Transparent and Flexible Memristor for Emulating Synapses. *ACS Applied Materials and Interfaces,* 14**,** 14541-14549.

Russo, U., Kamalanathan, D., Ielmini, D., Lacaita, A. L. & Kozicki, M. N. (2009). Study of multilevel programming in Programmable Metallization Cell (PMC) memory. *IEEE Transactions on Electron Devices,* 56**,** 1040-1047.

Saini, S., Dwivedi, A., Lodhi, A., Khandelwal, A. & Tiwari, S. P. Flexible Forming Free Resistive Memory Device with 2D Material MoSe2as Switching Layer. 7th IEEE Electron Devices Technology and Manufacturing Conference: Strengthen the Global Semiconductor Research Collaboration After the Covid-19 Pandemic, EDTM 2023, 2023.

Saini, S., Dwivedi, A., Lodhi, A., Khandelwal, A. & Tiwari, S. P. (2023). Resistive switching behavior of TiO2/(PVP:MoS2) nanocomposite hybrid bilayer in rigid and flexible RRAM devices. *Memories - Materials, Devices, Circuits and Systems,* 4**,** 100029.

Saini, S., Dwivedi, A., Lodhi, A., Khandelwal, A. & Tiwari, S. P. (2024). Multilevel Resistive Switching in Flexible RRAM Devices with a PVP:MoSe2 Active Layer. *ACS Applied Electronic Materials,* 6**,** 6718-6725.

Saini, S., Lodhi, A., Dwivedi, A., Khandelwal, A. & Tiwari, S. P. Resistive Switching Behavior of TiO2/(PVP:MoS2) Nanocomposite Bilayer Hybrid RRAM. Communications in Computer and Information Science, 2022. 478-485.

Saini, S., Lodhi, A., Dwivedi, A., Khandelwal, A. & Tiwari, S. P. (2023). Enhanced Resistive Switching in Flexible Hybrid RRAM Devices With PVK:MoS2/TiO2Bilayer. *IEEE Transactions on Electron Devices,* 70**,** 53-58.

Saini, S., Lodhi, A., Dwivedi, A., Khandelwal, A. & Tiwari, S. P. (2024). Comprehensive Investigation of Shelf Life and Performance of Flexible Hybrid RRAM Devices With PVK:MoS2/TiO2 Bilayer. *IEEE Transactions on Electron Devices,* 71**,** 2983-2989.

Saini, S. & Tiwari, S. P. (2024). Investigation of solution-processed tungsten disulfide as switching layer in flexible resistive memory devices for performance and stability. *Nano Express,* 5**,** 045012.

Sarkar, P. K., Bhattacharjee, S., Prajapat, M. & Roy, A. (2015). Incorporation of SnO2 nanoparticles in PMMA for performance enhancement of a transparent organic resistive memory device. *RSC Advances,* 5**,** 105661-105667.

Serrano, I. G., Panda, J., Edvinsson, T. & Kamalakar, M. V. (2020). Flexible transparent graphene laminates: Via direct lamination of graphene onto polyethylene naphthalate substrates. *Nanoscale Advances,* 2**,** 3156-3163.

Shang, J., Xue, W., Ji, Z., Liu, G., Niu, X., Yi, X., Pan, L., Zhan, Q., Xu, X. H. & Li, R. W. (2017). Highly flexible resistive switching memory based on amorphous-nanocrystalline hafnium oxide films. *Nanoscale,* 9**,** 7037-7046.

Shen, Y. C., Chen, C. Y., Lee, L., Chiang, C. H., Hsu, Y. C., Cyu, R. H., Peng, Y. R., Yu, Y. J., Kuo, H. C., Tseng, T. Y. & Chueh, Y. L. (2023). Two-Dimensional (2D) Materials-Inserted Conductive Bridge Random Access Memory: Controllable Injection of Cations in Vertical Stacking Alignment of MoSe2 Layers Prepared by Plasma-Assisted Chemical Vapor Reaction. *ACS Materials Letters,* 5**,** 1401-1410.

Shen, Z., Qi, Y., Mitrovic, I. Z., Zhao, C., Hall, S., Yang, L., Luo, T., Huang, Y. & Zhao, C. (2019). Effect of annealing temperature for Ni/AlOx/Pt RRAM devices fabricated with solution-based dielectric. *Micromachines,* 10.

Shen, Z., Zhao, C., Qi, Y., Xu, W., Liu, Y., Mitrovic, I. Z., Yang, L. & Zhao, C. (2020). Advances of RRAM devices: Resistive switching mechanisms, materials and bionic synaptic application. *Nanomaterials,* 10**,** 1-31.

Sherazi, S. S. H., Rehman, M. M., Ur Rehman, H. M. M., Kim, W. Y., Siddiqui, G. U. & Karimov, K. S. (2020). Electroforming-free flexible organic resistive random access memory based on a nanocomposite of poly(3-hexylthiophene-2,5-diyl) and orange dye with a low threshold voltage. *Semiconductor Science and Technology,* 35.

Shi, L., Shang, D. S., Sun, J. R. & Shen, B. G. (2010). Flexible resistance memory devices based on Cu/ZnO:Mg/ITO structure. *Physica Status Solidi - Rapid Research Letters,* 4**,** 344-346.

Shringi, A. K., Betal, A., Sahu, S., Saliba, M. & Kumar, M. (2022). Resistive Switching and Synaptic Behavior of Perovskite Lanthanum Orthoferrite Thin Film for Neuromorphic Computing. *IEEE Transactions on Electron Devices,* 69**,** 6465-6470.

Siddiqui, G. U., Rehman, M. M., Yang, Y. J. & Choi, K. H. (2017). A two-dimensional hexagonal boron nitride/polymer nanocomposite for flexible resistive switching devices. *Journal of Materials Chemistry C,* 5**,** 862-871.

Singh, E., Singh, P., Kim, K. S., Yeom, G. Y. & Nalwa, H. S. (2019). Flexible Molybdenum Disulfide (MoS 2) Atomic Layers for Wearable Electronics and Optoelectronics. *ACS Applied Materials and Interfaces,* 11**,** 11061-11105.

Sun, F., Wang, X., Wu, D., El-Khouly, M., Zheng, T., Zhang, B. & Chen, Y. (2023). Conjugated Polymer-Functionalized 2D MXene Nanosheets for Nonvolatile Memory Devices with High Environmental Stability. *ACS Applied Nano Materials,* 6**,** 7186-7195.

Sun, Y., Li, L., Wen, D. & Bai, X. (2015). Bistable electrical switching and nonvolatile memory effect in mixed composite of oxadiazole acceptor and carbazole donor. *Organic Electronics,* 25**,** 283-288.

Sun, Y., Miao, F., Li, R. & Wen, D. (2015). Resistive switching memory devices based on electrical conductance tuning in poly(4-vinyl phenol)-oxadiazole composites. *Physical Chemistry Chemical Physics,* 17**,** 29978-29984.

Sun, Y. & Wen, D. (2019). Nonvolatile WORM and rewritable multifunctional resistive switching memory devices from poly(4-vinyl phenol) and 2-amino-5-methyl-1,3,4-thiadiazole composite. *Journal of Alloys and Compounds,* 806**,** 215-226.

Sun, Y., Wen, D. & Sun, F. (2021). Boron nitride and molybdenum disulfide as 2D composite element selectors with flexible threshold switching. *Journal of Alloys and Compounds,* 869.

Trapatseli, M., Khiat, A., Cortese, S., Serb, A., Carta, D. & Prodromakis, T. (2016). Engineering the switching dynamics of TiOx-based RRAM with Al doping. *Journal of Applied Physics,* 120.

Tsigkourakos, M., Bousoulas, P., Aslanidis, V., Skotadis, E. & Tsoukalas, D. (2017). Ultra-Low Power Multilevel Switching with Enhanced Uniformity in Forming Free TiO2−x-Based RRAM with Embedded Pt Nanocrystals. *Physica Status Solidi (A) Applications and Materials Science,* 214.

Valov, I., Waser, R., Jameson, J. R. & Kozicki, M. N. (2011). Electrochemical metallization memories - Fundamentals, applications, prospects. *Nanotechnology,* 22.

Varun, I., Bharti, D., Mahato, A. K., Raghuwanshi, V. & Tiwari, S. P. (2018). Investigation of resistive switching in PVP and ultra-thin HfOx based bilayer hybrid RRAM. *Solid State Ionics,* 325**,** 196-200.

Varun, I., Bharti, D., Mahato, A. K., Raghuwanshi, V. & Tiwari, S. P. (2020). High-Performance Flexible Resistive RAM with PVP:GO Composite and Ultrathin HfOx Hybrid Bilayer. *IEEE Transactions on Electron Devices,* 67**,** 949-954.

Varun, I., Mahato, A. K., Raghuwanshi, V. & Tiwari, S. P. (2020). Ultralow Current Switching in Flexible Hybrid PVP:MoS 2 /HfO x Bilayer Devices. *IEEE Transactions on Electron Devices,* 67**,** 3472-3477.

Vyas, G., Dagar, P. & Sahu, S. (2016). A complementary switching mechanism for organic memory devices to regulate the conductance of binary states. *Applied Physics Letters,* 108.

Wang, L.-H., Yang, W., Sun, Q.-Q., Zhou, P., Lu, H.-L., Ding, S.-J. & Wei Zhang, D. (2012). The mechanism of the asymmetric SET and RESET speed of graphene oxide based flexible resistive switching memories. *Applied Physics Letters,* 100.

Wang, L., Wang, Y. & Wen, D. (2022). Switching-enhanced RRAM for reliable synaptic simulation and multilevel data storage. *Journal of Alloys and Compounds,* 892.

Wang, P., Hu, M., Wang, H., Chen, Z., Feng, Y., Wang, J., Ling, W. & Huang, Y. (2020). The Evolution of Flexible Electronics: From Nature, Beyond Nature, and To Nature. *Advanced Science,* 7.

Wang, X. F., Tian, H., Zhao, H. M., Zhang, T. Y., Mao, W. Q., Qiao, Y. C., Pang, Y., Li, Y. X., Yang, Y. & Ren, T. L. (2018). Interface Engineering with MoS2–Pd Nanoparticles Hybrid Structure for a Low Voltage Resistive Switching Memory. *Small,* 14.

Wang, Y., Yang, J., Wang, Z., Chen, J., Yang, Q., Lv, Z., Zhou, Y., Zhai, Y., Li, Z. & Han, S. T. (2019). Near-Infrared Annihilation of Conductive Filaments in Quasiplane MoSe 2 /Bi 2 Se 3 Nanosheets for Mimicking Heterosynaptic Plasticity. *Small,* 15.

Wong, H. S. P., Lee, H. Y., Yu, S., Chen, Y. S., Wu, Y., Chen, P. S., Lee, B., Chen, F. T. & Tsai, M. J. Metal-oxide RRAM. Proceedings of the IEEE, 2012. 1951-1970.

Wright, G. T. (1961). Mechanisms of space-charge-limited current in solids. *Solid State Electronics,* 2**,** 165-189.

Wu, H. Y., Lin, C. C. & Lin, C. H. Characteristics of graphene-oxide-based flexible and transparent resistive switching memory. Ceramics International, 2015. S823-S828.

Wu, L., Guo, J., Zhong, W., Zhang, W., Kang, X., Chen, W. & Du, Y. (2019). Flexible, multilevel, and low-operating-voltage resistive memory based on MoS2–rGO hybrid. *Applied Surface Science,* 463**,** 947-952.

Wu, X., Xu, Z., Yu, Z., Zhang, T., Zhao, F., Sun, T., Ma, Z., Li, Z. & Wang, S. (2015). Resistive switching behavior of photochemical activation solution-processed thin films at low temperatures for flexible memristor applications. *Journal of Physics D: Applied Physics,* 48.

Wu, Z., Wang, T., Sun, C., Liu, P., Xia, B., Zhang, J., Liu, Y. & Gao, D. (2017). Resistive switching effect of N-doped MoS2-PVP nanocomposites films for nonvolatile memory devices. *AIP Advances,* 7.

Xie, C., Nie, B., Zhu, L., Zeng, L. H., Yu, Y. Q., Wang, X. H., Fang, Q. L., Luo, L. B. & Wu, Y. C. (2013). High-performance nonvolatile Al/AlOx/CdTe:Sb nanowire memory device. *Nanotechnology,* 24.

Yalagala, B., Sahatiya, P., Mattela, V. & Badhulika, S. (2019). Ultra-low Cost, Large Area Graphene/MoS2-Based Piezotronic Memristor on Paper: A Systematic Study for Both Direct Current and Alternating Current Inputs. *ACS Applied Electronic Materials,* 1**,** 883-891.

Yan, X., Qin, C., Lu, C., Zhao, J., Zhao, R., Ren, D., Zhou, Z., Wang, H., Wang, J., Zhang, L., Li, X., Pei, Y., Wang, G., Zhao, Q., Wang, K., Xiao, Z. & Li, H. (2019). Robust Ag/ZrO2/WS2/Pt Memristor for Neuromorphic Computing. *ACS Applied Materials and Interfaces,* 11**,** 48029-48038.

Yan, Y., Sun, B. & Ma, D. (2015). Resistive switching memory characteristics of single MoSe2 nanorods. *Chemical Physics Letters,* 638**,** 103-107.

Yang, B., Xu, N., Li, C., Huang, C., Ma, D., Liu, J., Arumí, D. & Fang, L. (2020). A forming-free ReRAM cell with low operating voltage. *IEICE Electronics Express,* 17**,** 1-4.

Yang, K., Li, F., Veeramalai, C. P. & Guo, T. (2017). A facile synthesis of CH3NH3PbBr3 perovskite quantum dots and their application in flexible nonvolatile memory. *Applied Physics Letters,* 110.

Yang, P., Tian, F. & Ohki, Y. (2014). Dielectric properties of poly(ethylene terephthalate) and poly(ethylene 2,6-naphthalate). *IEEE Transactions on Dielectrics and Electrical Insulation,* 21**,** 2310-2317.

Yang, X., Huang, J., Gao, S., Zhao, Y., Huang, T., Li, H., Liu, T., Yu, Z. & Cao, R. (2023). Solution-Processed Hydrogen-Bonded Organic Framework Nanofilms for High-Performance Resistive Memory Devices. *Advanced Materials,* 35.

Yuan, F., Wang, J. C., Zhang, Z., Ye, Y. R., Pan, L., Xu, J. & Lai, C. S. (2014). Hybrid aluminum and indium conducting filaments for nonpolar resistive switching of Al/AlOx/indium tin oxide flexible device. *Applied Physics Express,* 7.

Yun, H. J. & Choi, B. J. (2019). Effects of moisture and electrode material on AlN-based resistive random access memory. *Ceramics International,* 45**,** 16311-16316.

Zahoor, F., Azni Zulkifli, T. Z. & Khanday, F. A. (2020). Resistive Random Access Memory (RRAM): an Overview of Materials, Switching Mechanism, Performance, Multilevel Cell (mlc) Storage, Modeling, and Applications. *Nanoscale Research Letters,* 15**,** 90.

Zhang, B., Liu, L., Wang, L., Liu, B., Tian, X. & Chen, Y. (2018). Covalent Modification of Graphene Oxide with Poly(N-vinylcarbazole) Containing Pendant Azobenzene Chromophores for Nonvolatile Ternary memories. *Carbon,* 134**,** 500-506.

Zhang, C., Shang, J., Xue, W., Tan, H., Pan, L., Yang, X., Guo, S., Hao, J., Liu, G. & Li, R. W. (2016). Convertible resistive switching characteristics between memory switching and threshold switching in a single ferritin-based memristor. *Chemical Communications,* 52**,** 4828-4831.

Zhang, H., Zhao, X., Huang, J., Bai, J., Hou, Y., Wang, C., Wang, S. & Bai, X. (2020). Bistable non-volatile resistive memory devices based on ZnO nanoparticles embedded in polyvinylpyrrolidone. *RSC Advances,* 10**,** 14662-14669.

Zhang, P., Gao, C., Xu, B., Qi, L., Jiang, C., Gao, M. & Xue, D. (2016). Structural Phase Transition Effect on Resistive Switching Behavior of MoS2-Polyvinylpyrrolidone Nanocomposites Films for Flexible Memory Devices. *Small,* 12**,** 2077-2084.

Zhang, S. R., Zhou, L., Mao, J. Y., Ren, Y., Yang, J. Q., Yang, G. H., Zhu, X., Han, S. T., Roy, V. A. L. & Zhou, Y. (2019). Artificial Synapse Emulated by Charge Trapping-Based Resistive Switching Device. *Advanced Materials Technologies,* 4.

Zhang, W., Kong, J.-Z., Cao, Z.-Y., Li, A.-D., Wang, L.-G., Zhu, L., Li, X., Cao, Y.-Q. & Wu, D. (2017). Bipolar Resistive Switching Characteristics of HfO2/TiO2/HfO2 Trilayer-Structure RRAM Devices on Pt and TiN-Coated Substrates Fabricated by Atomic Layer Deposition. *Nanoscale Research Letters,* 12**,** 393.

Zhang, X., Qiao, H., Nian, X., Huang, Y. & Pang, X. (2016). Resistive switching memory behaviours of MoSe2 nano-islands array. *Journal of Materials Science: Materials in Electronics,* 27**,** 7609-7613.

Zhang, Y., Zhang, J., Lu, Y., Duan, Y., Yan, S. & Shen, D. (2004). Glass Transition Temperature Determination of Poly(ethylene terephthalate) Thin Films Using Reflection-Absorption FTIR. *Macromolecules,* 37**,** 2532-2537.

Zhao, X., Wang, Z., Xie, Y., Xu, H., Zhu, J., Zhang, X., Liu, W., Yang, G., Ma, J. & Liu, Y. (2018). Photocatalytic Reduction of Graphene Oxide–TiO2 Nanocomposites for Improving Resistive-Switching Memory Behaviors. *Small,* 14.

Zhou, H., Fang, G. J., Zhu, Y., Liu, N., Li, M. & Zhao, X. Z. (2011). Flexible resistive switching memory based on Mn0.20Zn 0.80O/HfO2 bilayer structure. *Journal of Physics D: Applied Physics,* 44.

Zhou, J., Feng, H., Sun, Q., Xie, Z., Pang, X., Minari, T., Liu, X. & Zhang, L. (2022). Resistance-switchable conjugated polyrotaxane for flexible high-performance RRAMs. *Materials Horizons,* 9**,** 1526-1535.

Zhou, P. K., Yu, H., Huang, W., Chee, M. Y., Wu, S., Zeng, T., Lim, G. J., Xu, H., Yu, Z., Li, H., Lew, W. S. & Chen, X. (2024). Photoelectric Multilevel Memory Device based on Covalent Organic Polymer Film with Keto–Enol Tautomerism for Harsh Environments Applications. *Advanced Functional Materials,* 34.

Zou, L. (2021). Multilevel resistive switching performance of TiO2-based flexible memory prepared by low-temperature sol-gel method with UV irradiation. *Current Applied Physics,* 24**,** 32-38.