2024.12.31 University of Science and Technology of China

MONTHLY REPORT

第 4 期 By International College



Abstract

◎ Research ◎ Activity ◎ News

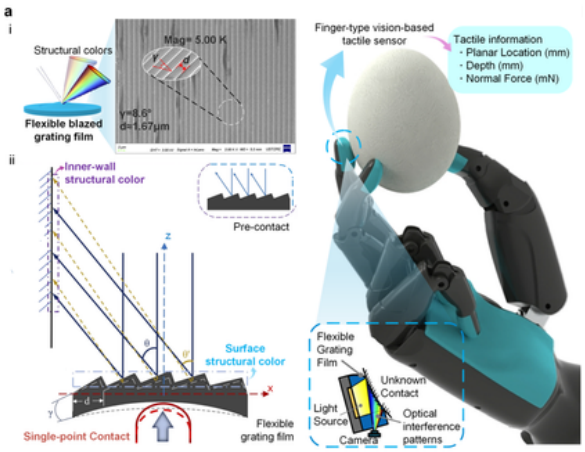
We’d love to hear from you! Whether it’s a memorable photo, a short video, an inspiring article, or even just a single sentence about your experience, your contributions are valuable to us.



RESEARCH

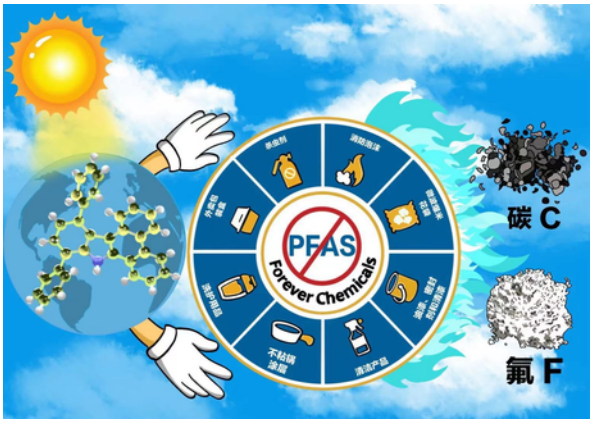
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New Tactile Perception Achieves High Accuracy



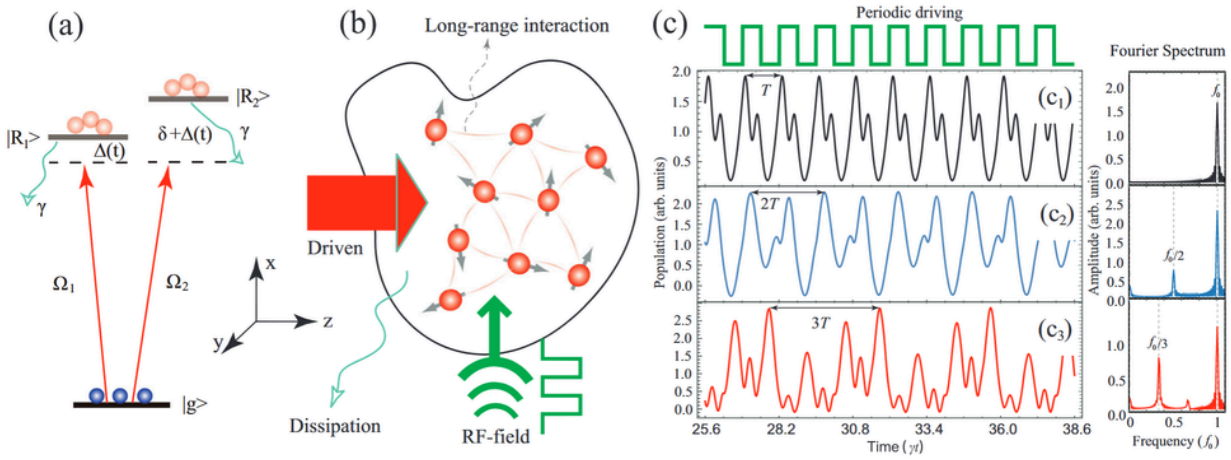
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USTC Scientists Achieve Low-Temperature, Efficient Degradation of "Forever Chemicals"



· 3

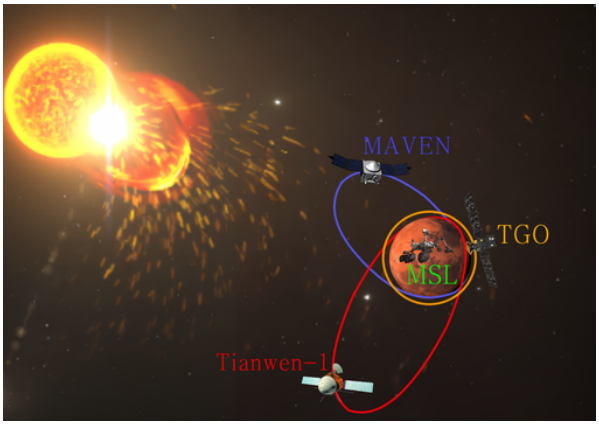
USTC Observes Higher-order and Fractional DTCs in Floquet-driven Rydberg Atomic Gases



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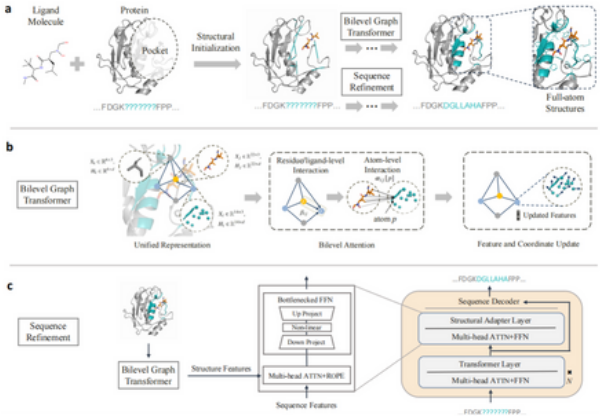
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Scientists First Achieves the Construction of Mars Solar Energetic Particle Spectrum



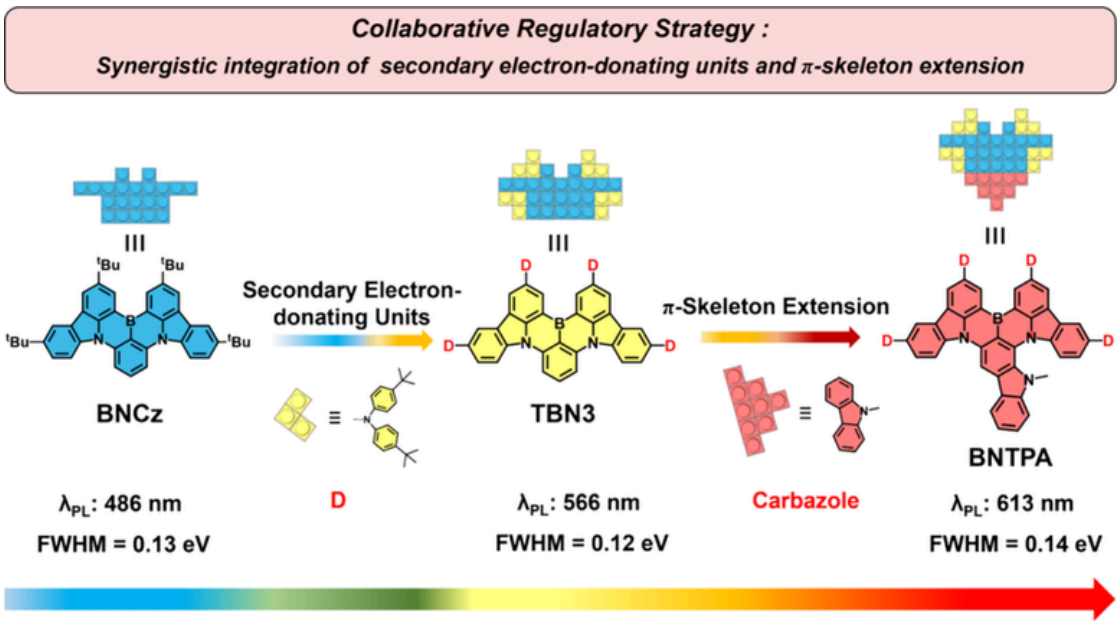
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USTC Achieves Breakthrough in Functional Protein Design with Deep Generative Models



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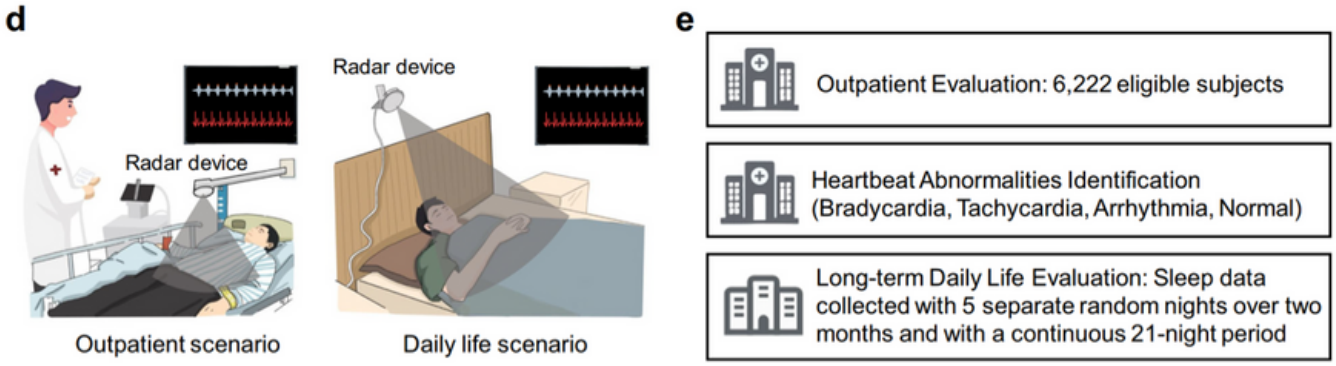
USTC Proposes a New Strategy for Designing Pure-Red OLED Materials



RESEARCH

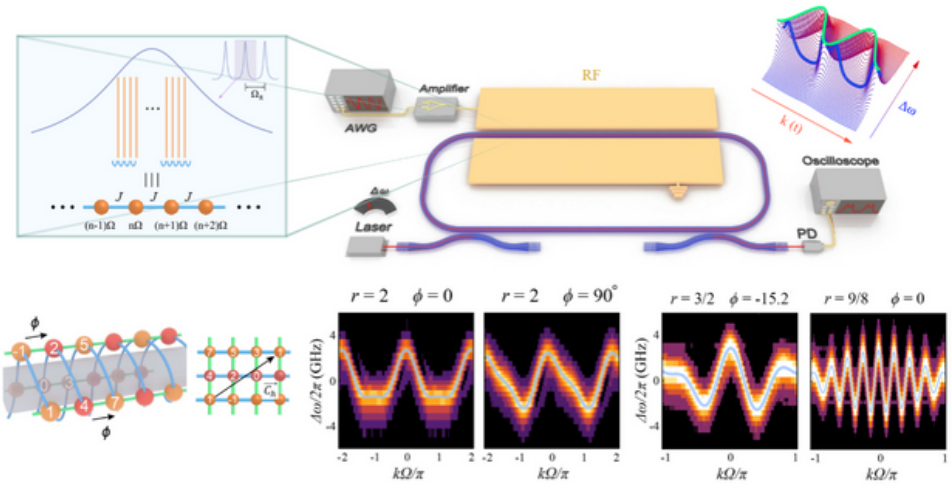
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USTC Achieves Long-Term Cardiac Monitoring with Non-Invasive RF Technology



· 8

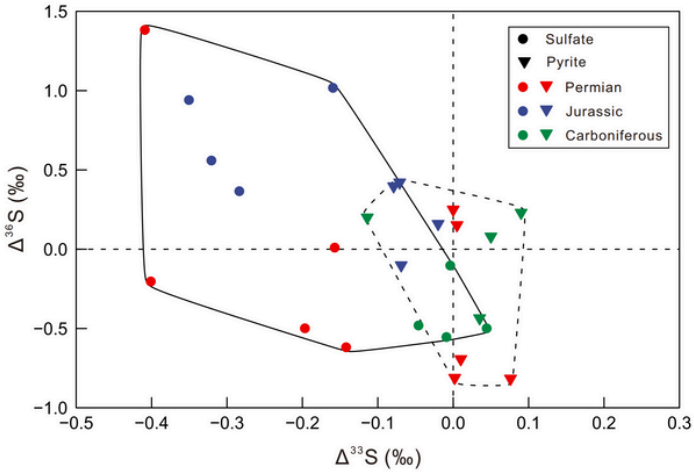
Low-Frequency Photonic Simulator Breaks Barriers in Synthetic Frequency Dimensions



RESEARCH

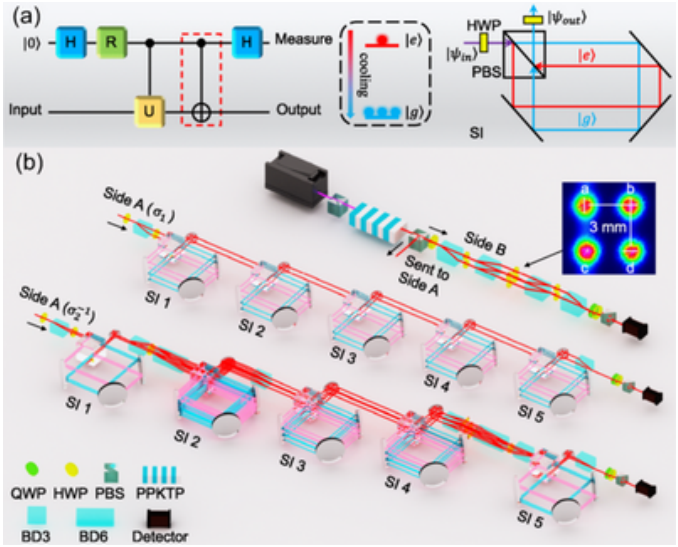
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USTC Decodes Haze Sources and Formation Mechanisms with Sulfur Isotopes



· 10

USTC Achieves Calculation of the Jones Polynomial Based on Majorana Zero Modes



ACTIVITY

· 2024-12-25

Celebrating Positivity and Fun: USTC’ s 8th Color Run Ends with Great Success

















· 2024-12-28

Pygmalion
The English Stage Play



ACTIVITY

· 2024-12-30

2025 New Year Party







News

The 2024 Annual Forum of Directors of International Fire Research Institutes Convenes in Hefei

The 2024 Annual Forum of Directors of International Fire Research Institutes was held from October 29 to 31 in Hefei, hosted by the State Key Laboratory of Fire Science (SKLFS) at the University of Science and Technology of China (USTC). Leaders from 16 prominent fire research institutes across 7 countries attended both in person and online.





ALUMNI COLUMN

01 | A Transformative Journey: My Academic Growth at USTC

SUY RATHNY
BL15216010

Studying at the University of Science and Technology of China (USTC) from 2015 to 2019 was one of the most rewarding experiences of my life. During this time, I was a PhD student at the School of Public Affairs, where I had the privilege of being mentored by Professor Song Wei. His guidance played a significant role in shaping my academic development, particularly in refining my writing and critical thinking skills. I am deeply grateful to him and to all the professors who supported me throughout my journey.



One of the most transformative aspects of my time at USTC was learning how to express my ideas clearly and effectively. This skill not only strengthened my academic abilities but also prepared me for challenges beyond university. Through various assignments and projects, I learned how to structure my thoughts, analyze complex issues, and communicate my perspectives with confidence. These skills have since been invaluable in both my career and personal life.



The environment at USTC was one of collaboration and intellectual growth. The university encouraged open discussions, creative problem-solving, and the exchange of ideas. This supportive atmosphere helped me develop a deeper understanding of my field of study and inspired me to think critically about the world around me. I appreciated how the professors, alongside their teaching, also fostered a spirit of curiosity and exploration, pushing us to ask questions and challenge assumptions.

After graduating from USTC, I was fortunate to join Limkokwing University of Creative Technology at its Cambodia campus, one of the leading international universities in the country. As a full-time lecturer in the Foundation Department, I now have the privilege of guiding students who are just beginning their higher education journey. This role has given me the opportunity to share the knowledge and skills I acquired at USTC, while also inspiring my students to strive for their own academic and personal growth.

Looking back on my years at USTC, I realize how transformative that experience was in shaping both my academic path and my approach to life. The lessons I learned there, along with the relationships I built with professors and peers, continue to guide me as I move forward in my career. For all these reasons, USTC will always hold a special place in my heart, and I will forever cherish the time I spent there, which helped lay the foundation for who I am today.

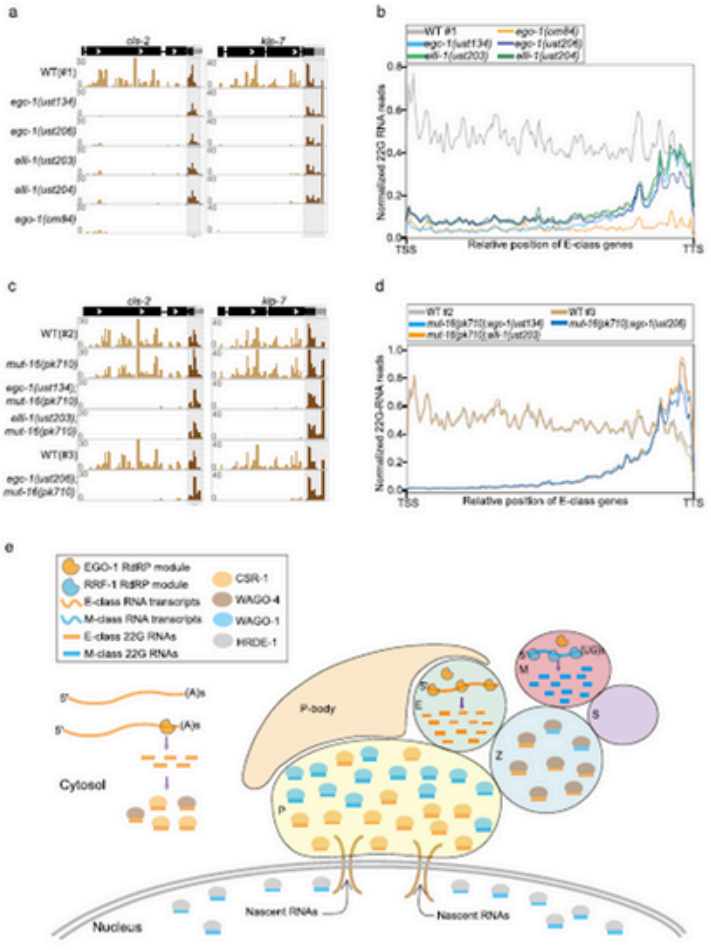


02 | The Journey of My Academic Pursuit in USTC

FAREES MUFTI
BL15008003

I am Farees Mufti, a USTC international student from Pakistan at Life Science and Medicine, recently graduated student from the research group of Professor Guang Shouhong discovers new subcellular organelles. The discovery research is recently published in Nature Communication entitled “Germ granule compartments coordinate specialized small RNA production”. I, myself, as co-first author with Xiangyang Chen and Wang Ke from group of Prof. Guang Shouhong unveiled new subcellular organelle, the E-granule involved in siRNA amplification in nematodes. The study highlights the roles of five key proteins players EGO-1, EKL-1, ELLI-1, DRH-3 and novel protein EGC-1, and shedding light on molecular mechanisms of E-granule. This work of these players ensures proper production of 22G RNAs.





This discovery is a step forward in biomedical research that not only advances our fundamental understanding of cellular biology but also opens new avenues for practical applications in both medicine and biotechnology. This research highlights critical role of germ granule in RNA production, offering new insights that could lead to breakthroughs in treating infertility, fighting oncogene, RNA based therapies and potential applications of RNAi domain. This research was supported by the research groups of Dong Mengqiu from the Beijing Institute of Life Sciences and Germano Cecere from the Department of Developmental and Stem Cell Biology at Pasteur University in France. It was strongly supported by the National Innovative Talents Program, the Ministry of Science and Technology, the National Natural Science Foundation of China, the Chinese Academy of Sciences, CAS-TWAS, and the University of Science and Technology of China (USTC). This work has also got accepted and presented in several national and international conferences recognized by the 24th International C.elegans conference in Glassgow organized by Genetics Society of America (GSA) in 2022, also participated in European Worm Meeting, Austria and recently won the prestigious CE-Neuro Travel Award 2024 and presented the poster in competition of Wisconsin University at Madison USA.

The Journey of My Academic Pursuit in USTC

To recall my doctoral journey, indeed it was a challenging time. During this research journey, upon accidental death of my beloved father Professor Mufti Iftikhar prior the COVID pandemic I could not attend funeral and also lost my home due domestic financial constraints but continued my struggle being a researcher. Looking back on my doctoral studies and graduated in recent past successfully I am emotional and fully determined to showcase my dedications to academic excellence and social responsibility towards betterment of community around. I am truly indebted to the ISO of USTC and extends my heartfelt thanks to my mentor Prof. Shouhong Guang for my support and kind guidelines throughout this research to help me move forward on the road to pursuing academic dream of success. I think the arrival to Hefei and USTC a downtown of science and research innovation, as well as among people of varying languages and culture differences, indeed was a challenge but I copped with handy way due to nice learned professional teachers and supportive classmates of USTC and China and fellows of other countries. They not only encourage me to groom academics rather helped to improve the career in life. I attributes and unlocks the key to success by repeating the words of my supervisor Professor Shouhong Guang that “Seeing is Believing” and reminded the famous saying of honorable Comrade Sir Mao Zedong (hǎo hǎo xué xí，tiān tiān xiàng shàng) “好好学习，天天向上” (Study hard and make progress everyday).

The journey of academic pursuit is often compared to climbing a great mountain—a path that is steep, demanding, yet immensely rewarding. For me, this journey was not one I traveled alone. It was deeply rooted in the values of perseverance, collective harmony, and respect for those who guided me. With the prayers of my parents, the steadfast support of my supervisor, Professor Shouhong Guang, and the spirit of our research team, I embraced the Confucian ideal of lifelong learning, blending individual effort with the strength of the community. Particularly “Keep Moving” and “Keep the People Move Forward” as the Qiushi magazine highlights that socialist and communist philosophy believe in and train people and like minds to nurture healthy.



In our research group, we adhered to the values of communication and cooperation—core tenets of Chinese culture. Every week, we gathered like a family, discussing our progress and work report, sharing our challenges, and refining our approach. Just as in traditional Chinese philosophy where collective effort is paramount, we overcame obstacles by pooling our wisdom. This environment taught me how to foster harmonious relationships, communicate with humility, and bring out the best in myself and others in the pursuit of knowledge. If I were to describe our research group in three words, they would be: innovation, cooperation, and spirit—the essence of Chinese cultural pursuit.

02 | The Journey of My Academic Pursuit in USTC

As the ancient Chinese proverb goes, "The higher you aim, the higher you will achieve." Surrounded by the excellence of my peers, I was constantly inspired to push myself further. At USTC, my academic journey led me to the pinnacle of success: publishing in Nature Communications, a prestigious SCI journal. This achievement reflected not only my own efforts but also the collective spirit of our team and our shared vision for the future. My work has been cited more than 1,000 times globally, a testament to the reach and impact of our contributions to science.

Under the careful guidance of my esteemed supervisor, Professor Guang, I embarked on a path that integrated traditional values of diligence and respect for knowledge. We explored the mysteries of genetics, focusing on molecular pathways that could one day transform the treatment of genetics related diseases by RNA based therapy. Each step was filled with challenges, much like the tests of resilience often faced by historical Chinese scholars. Yet, I was steadfast. My mantra, "Winners never quit, and quitters never win," aligned with the persistence and moral integrity. From the very first day of my doctoral studies, I embraced three principles: tireless effort, deep research, and a punctilious work ethics—pillars of scientific research and development.



In July 2024, when I received the news that our paper had been accepted for publication in Nature Communications, I was overwhelmed with joy. Like the ancient Chinese saying, "Good things come to those who wait," I had invested countless days and nights, refining experiments and revising manuscripts. At that moment, all the hard work and patience became worthwhile. It was not just a personal success but a victory for our entire research group—a reflection of our shared dedication and the spirit of perseverance that runs deep in Chinese culture.

Beyond my academic achievements, I remained committed to the broader USTC community, much like the Confucian ideal of serving society through learning. I actively participated in volunteer work and academic organizations, contributing to the greater good. My efforts were recognized with honors such as the USTC International Student Social Service Award, participated in Volunteer Blood Donation Camp and the Outstanding International Student Association Member award. Through these experiences, I learned the value of service, a virtue long held in esteem in Chinese society.

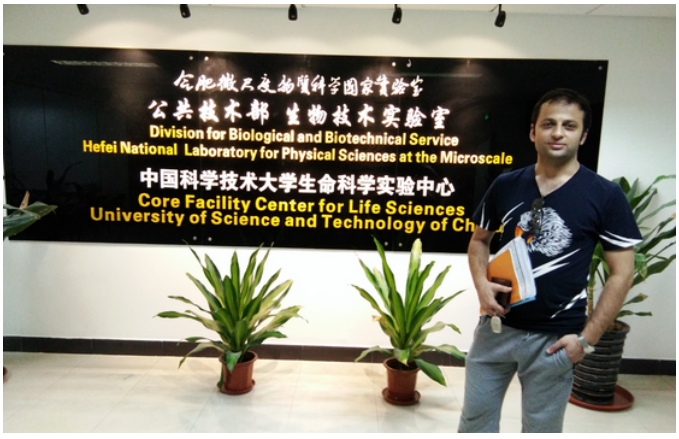
As I look toward the future, my passion for molecular biology burns brightly. I am committed to continuing my research, following in the footsteps of the great scholars of China, who dedicated their lives to the pursuit of knowledge. My long-term goal is to secure a faculty position at a leading research university, where I can blend the Confucian ideal of teaching with cutting-edge scientific research. I hope to create a bridge between academia and industry, much like the Chinese value of harmony, where practical applications arise from theoretical advancements, benefiting all of society.

Last but not least, I extend my deepest gratitude to my supervisor, Professor Shouhong Guang, whose guidance mirrors the Confucian role of the mentor—a figure who shapes not just the intellect but the character of their student. His wisdom and support were instrumental in guiding me through the challenges and triumphs of my academic journey.

I am also sincerely thankful to the International College, which provided a nurturing and supportive environment, much like a family. The activities and resources organized by the college enriched my experience, making me feel at home despite being far from my homeland. The unique blend of tradition and modernity in this city has made me fall in love with China and its culture.



Finally, I offer my heartfelt appreciation to the University of Science and Technology of China. USTC has provided me with the opportunity to study at one of China's most prestigious institutions, where advanced research facilities and a vibrant academic community allowed me to thrive. My story is one of persistence, resilience, and dedication to learning—values that are deeply intertwined with Chinese cultural heritage. I attributes and very much grateful to the Chinese Government for providing a platform for students to excel in science and research.





As I move forward, I carry with me the teachings of CPC and abide the socialist communist thoughts and Confucius, the spirit of innovation, and a deep commitment to using science to make the world a better place. I hope to continue contributing to the field of molecular biology, life science and development of treatments that inspire future generations, and uphold the virtues of knowledge, harmony, and service that have shaped my journey.

