

Radamson: Nanotechnology Is a Game Changer

Dialogue

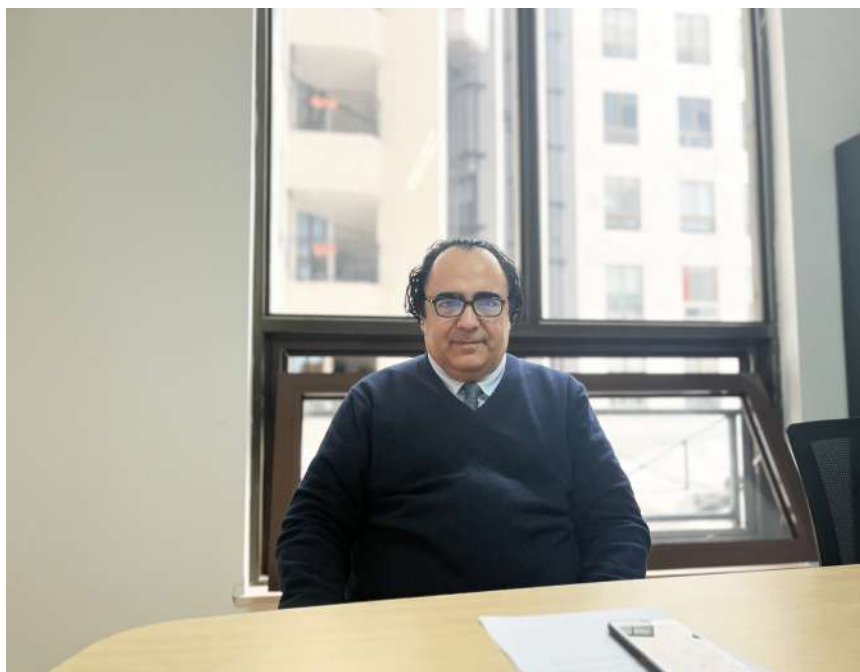
By BI Weizi & LONG Yun

Swedish scientist Henry H. Radamson, a member of the European Academy of Sciences, has made great achievements in the fields of nanoelectronics, nanophotonics, thermoelectric materials and infrared sensors. Since 2016, he has been a full-time researcher at the Institute of Microelectronics, Chinese Academy of Sciences (CAS) and a lecturer at CAS University, committed to translating his research results into tangible benefits for people.

Love leads the way to China
Radamson earned his master's degree in physics and Ph.D. in materials physics from Linköping University (LiU), one of the largest, most innovative and highly regarded academic institutions in Sweden. "Then I was offered a job as a researcher at KTH Royal Institute of Technology, working mainly on germanium (Ge) and silicon (Si), the alloy material germanium tin (GeSn) and the applications of these materials," he told *Science and Technology Daily*.

He was dubbed an "industrial professor" there because he was actively involved in commercializing his research. He believes that no technology works in reality the way it does theoretically, and only when a theory is put into practice can it bring real benefits to people.

From 1997 to 2016, he created great value for Sweden in a number of national and international industrial projects, such as the development of shortwave infrared and mid-infrared detectors and night vision applications of germanium, silicon germanium and germanium tin



Professor Henry H. Radamson. (PHOTO: LONG Yun/S&T Daily)

materials, including Ericsson's high-frequency silicon germanium (SiGe) bipolar transistor project.

Impressed by the supportive research atmosphere, adequate funding programmes, friendly Chinese colleagues and talented Chinese students, Radamson made a big decision to continue his studies in China at the invitation of the director of Institute of Microelectronics. "Chinese culture is very close to ours. I know a lot about China and Chinese food is my favourite [cuisine]. If you like somewhere, you go there," he said, adding that Beijing is now his second home.

Broad applications of nanotechnology
Radamson's current research focuses on nanophotonics, electronics and infrared optoelectronic devices. "To put it simply, my main line of research is the integration of electronics with optics,"

he said, explaining how the mobile phone has gone from being a big, clunky brick to the size of a palm, due to the rapid development of integrated circuit (IC) technology.

Nanotechnology has wide-ranging applications in various industries, such as night vision systems for cars and medical scanning imaging. "We hope that the device we develop will be as light as a mobile phone and can scan the body directly to detect abnormalities in blood flow and detect tumors at an early stage," he said, adding that photonic ICs can make components smaller, use less power and have more functions.

Radamson went on to outline many potential applications of nanotechnology — clothes and shoes made with nanotechnology can be effectively waterproof; for people who love beauty, nanomaterials can also be used to make sun-

screen and anti-wrinkle creams; screens on computers, mobile phones and other devices are also inseparable from nanotechnology; while in the medical field, nanorobots can treat diseases in a more targeted way.

"Nano chips are faster to calculate and of course more difficult to design and manufacture. We need ultra-clean laboratories to process nanochips. But the continuous advancement of technology is for the public," he said, emphasizing that advanced technology should be affordable for everyone, which explains his determination to commercialize his findings.

Promoting international collaboration

As a member of the Executive Committee of the European Materials Research Society, he has spared no effort in promoting cooperation between China and the rest of the world. "High-level academic conferences are held every year in the field of materials science, and close links have been established between industry, universities and companies in R&D centers," he said, adding that he was honored to be able to build a bridge between China and Europe in research and education.

Over the past two years, Radamson has facilitated cooperation among Tel Aviv University in Israel, Italian universities and the Institute of Microelectronics at CAS. "We cooperate in organizing some seminars and workshops, and at the same time these scientists come to China and teach students at the University of the Chinese Academy of Sciences. Our international cooperation should not only be about research, but also about training young people. These young people are the future," he said.

My China Story

Where Art and Life Meet

By LONG Yun

Having experienced diverse beauty around the world, Tony Brown, a British artist, shared his perspective on the unique beauty of China. For him, the answer lies in one word: "the people."

For decades, he has been playing an active role in the academic field and international art exchanges. Now, he is the tenured full Professor of the école Nationale Supérieure des Beaux-arts de Paris and the Dean of the EAAD Art and Design School of Xi'an Eurasia University.

An interesting mix of modernity and cultural heritage

"[Recently], Chinese people have evolved but maintain certain parts of their cultural heritage," Brown told *Science and Technology Daily*, adding that Chinese people develop a collective understanding relative to family and others, which fosters a collaborative environment.

Brown recalled an exhibition experience in Paris that showcased this collaborative spirit of Chinese people. While students from Western countries worked individually, Chinese students systematically helped one another, demonstrating a shared approach that was more efficient and cohesive.

Three years ago, this British artist moved to Xi'an to find more inspiration and promote international educational cooperation. He was impressed by Xi'an's scale, culinary delights, and the enjoyment of life shown by its residents.

He enjoys the city's four distinct seasons and strong cultural background, highlighting the pride of the Shaanxi people in their history and culture. Xi'an remains true to its identity, with its residents embracing and preserving their unique cultural heritage, he said.

For Brown, Xi'an shows a harmonious blend of the modern environment and cultural heritage, which he calls "an interesting mix." He noted that, "There is a strong interest in not just dealing with the past, but also moving forward to embracing certain aspects of technological advances and very progressive thinking."

Adapting to changing trends

When seeing Brown's artworks, there is a compelling feeling to connect them to the nature of modernism. In fact, Brown was one of the first artists in the early 1980s to produce cutting-edge,

technologically oriented installation art. He believes in the power of the combination of art and technology.

As the world undergoes rapid transformation, Brown is cognizant of the significant impact of AI. His foresight extends to the integration of AI into educational programs. Three years ago, he introduced basic coding concepts in the Media Lab and helped students to realize the importance of understanding algorithms, which aims to empower students to navigate the evolving technological landscape and make meaningful contributions to society.

"I think our students have to be prepared for this shift that's going on," Brown said, adding that he believes an interdisciplinary oriented education will enrich and broaden a student's learning experience.

Brown expresses deep confidence in China's readiness for this shift, citing the government's initiatives to regulate AI responsibly within the cultural context.



Professor Tony Brown. (PHOTO: ZHANG Heyan/International Talent Magazine)

Reflecting on his experiences in China, Brown acknowledged the country's remarkable progress in becoming a technological powerhouse. He applauds the younger generation's agility in becoming "technology literate," a transformation that positions China at the forefront of the digital revolution.

Looking ahead, Brown said he will remain dedicated to his artistic practice and teaching endeavors. Having recently exhibited in Shenzhen and lectured in Shanghai, he cherishes the privilege of teaching at a university, especially engaging with the vibrant energy of young minds.

This article is also contributed by Xi'an Eurasia University.

Facts About Mycoplasma Pneumoniae Infections

Service Info

By Staff Reporters

Hospitals in parts of China are experiencing a surge in Mycoplasma pneumoniae infections — a common cause of respiratory illness in young children.

Xu Baoping, director of the Respiratory Department at Beijing Children's Hospital, Zhao Shunying, director of the Second Respiratory Department at Beijing Children's Hospital, and Zhang Haidi, a paediatrician at the First Affiliated Hospital of Guangzhou Medical University provided answers to people who are concerned by the recent infections.

Q: What is Mycoplasma pneumoniae infection?

Mycoplasma pneumoniae is a pathogenic microorganism with a size between bacteria and viruses. Due to the lack of cell walls, it has a natural ability to resist antibiotics that target cell wall synthesis. Mycoplasma pneumoniae is mainly transmitted by droplets and direct contact, with an incubation period of one to three weeks.

Mycoplasma pneumoniae infections circulate sporadically throughout the year, with regional epidemics occurring every three to seven years, and children aged around five years are the most affected group.

Q: What are the symptoms of Mycoplasma pneumoniae infection?

Mycoplasma pneumoniae usually

causes a common cold. Symptoms include a sore throat, tiredness and a slowly worsening cough that can last for weeks or months.

Children with a severe cough and high fever that persists should be taken to see a paediatrician as soon as possible. If a child has symptoms of choking or breathlessness, parents can pat hard on his back to clear the airway and then go to hospital for treatment as soon as possible.

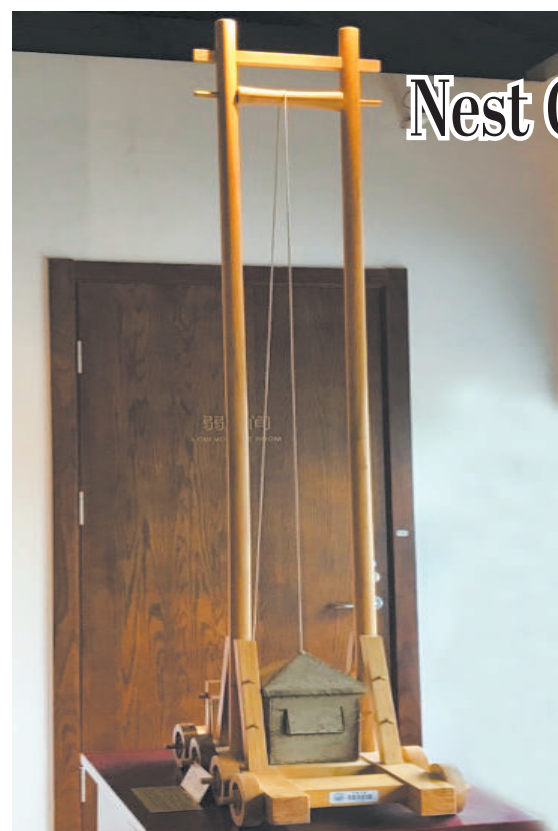
Q: How can it be prevented and controlled?

Most patients recover from an infection caused by Mycoplasma pneumoniae without antibiotics. However, if someone develops pneumonia (lung infection), antibiotics are often prescribed to help them recover from the infection more quickly, if treatment is

started early.

Children with refractory Mycoplasma infections and severe Mycoplasma infections require comprehensive treatment, such as glucocorticoids and interventional bronchoscopy. In February this year, the National Health Commission published the *Guidelines for Diagnosis and Treatment of Mycoplasma Pneumonia in Children (2023 Edition)*, which aims to further standardize its diagnosis and treatment.

To prevent Mycoplasma pneumoniae infection, good personal hygiene habits should be developed, such as social distancing, hand hygiene, frequent ventilation, and wearing a mask if necessary. You should also keep warm when ventilating indoors in autumn and winter.



A model of the Nest Car. (PHOTO: Tongji University Museum)

Nest Car: A Mobile Military Reconnaissance Post

Traditional Eastern Wisdom

By ZONG Shihan

In ancient times, the military deployed a vehicle equipped with a cabin for observing enemy movements from a high altitude, known as the Nest Car because the cabin was suspended high up on a pole, just like a bird's nest.

The Nest Car was made portable via a set of wheels at its base, allowing it to be pushed about by the military. Attached to the vehicle were two vertical wooden poles, connected by a small horizontal wooden pole at the top. The cabin was suspended on the small horizontal wooden pole with ropes and connected to a pulley, which could be lifted and lowered as desired.

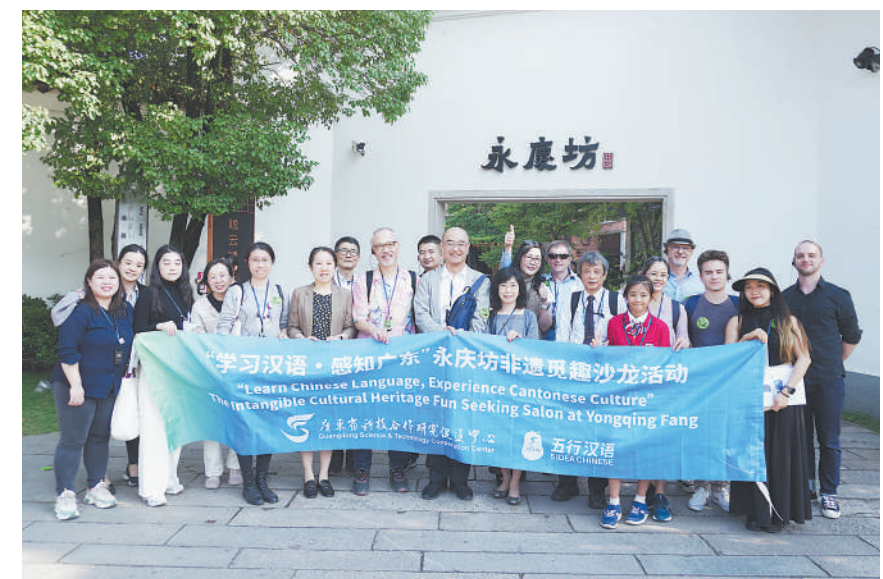
The cabin was wrapped in cowhide to repel arrow attacks and accommodated two soldiers, who could keep a 360 degree lookout for the enemy through 12 observation portals.

The history of the Nest Car can be traced back to 575 BC. According to Chinese history first detailed in the narrative chronicles of the Zuo Zhuan, written in the late Spring and Autumn Annals (770-476 BC), in the Battle of Yanling, the king of Chu and the prime minister jointly boarded the Nest Car to observe the movements of the Jin army from a high altitude. The text clearly records the scene of the king of Chu observing the Jin army gathering and divining in their camp.

The technological innovation of the Nest Car is mainly reflected in two aspects. The first point is that a pulley is used as a lifting device on the Nest Car. The pulley shaft on the vehicle could change the direction, allowing soldiers to lift the cabin to the top of the support poles by rotating the pulley on the ground.

The second point is that the Nest Car served as a mobile watchtower. In ancient times, there were watchtowers located on important buildings and campsites. However, the invention of the Nest Car made the watchtower portable, allowing soldiers to conduct reconnaissance missions at any time and place, providing reliable intelligence for military strategy formulation.

Photo News



On November 24, the "Experience Chinese Culture and Explore the Intangible Cultural Heritage" event was held at Guangzhou's historic Yongqing Fang cultural street by Guangdong Science and Technology Cooperation Center. While a Japanese expert gained a deeper understanding of Guangzhou's history through its rich culture heritage and applauded the melodious and graceful singing style of Cantonese opera, a French expert showed keen interest in traditional Chinese martial arts.

Located in the Liwan District of

Guangzhou, Yongqing Fang boasts 14 historic cultural street areas, 188 immovable cultural heritage buildings, and 226 historical structures, and hosts 60 various levels of intangible cultural heritage projects. The event aimed to bridge cultures and foster appreciation for Guangzhou's rich heritage.

Foreign experts participating in the event take a group photo with organizers in the courtyard of Yongqing Fang. (PHOTO: The Guangdong Science and Technology Cooperation Center)