



A transformative new non-volatile memory technology for future IOT, computer and other low energy applications

The LoMaRe Team

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The Company

LoMaRe Technologies Limited (LoMaRe) is a spinout company from Imperial College London, aiming to disrupt the fields of memory technology, data storage and sensing. The company's vision is to use the most cutting-edge thin-film technology and advanced manufacturing equipment to develop new material applications and new manufacturing process technologies for low power consumption electronics. The goal is to transform the company's innovative ideas and technologies into products which are truly beneficial and transformative to everyday life. In the last few years, LoMaRe has devoted its resources to developing a new non-volatile memory (NVM) technology that the industry has searched for many decades.

LoMaRe Memory Technology

A universal memory technology would have the following characteristics, high speed, high capacity, high endurance, high temperature stability, and the most importantly, low power consumption. LoMaRe's patented NVM technology embraces the merits of other emerging NVM technologies, eliminating fundamental limitations suffered by other concepts. The NVM technology can be easily applied to all existing electronic products and be suitable for future in-memory computing.

Lowest power technology ($\ll 0.1\text{pJ/bit}$)

- 10^6 x less than FLASH
- 20x less than MRAM

High temperature stability

- up to 120°C

Faster read/write speeds (1-10ns)

- up to 20,000x faster than FLASH

- similar to DRAM

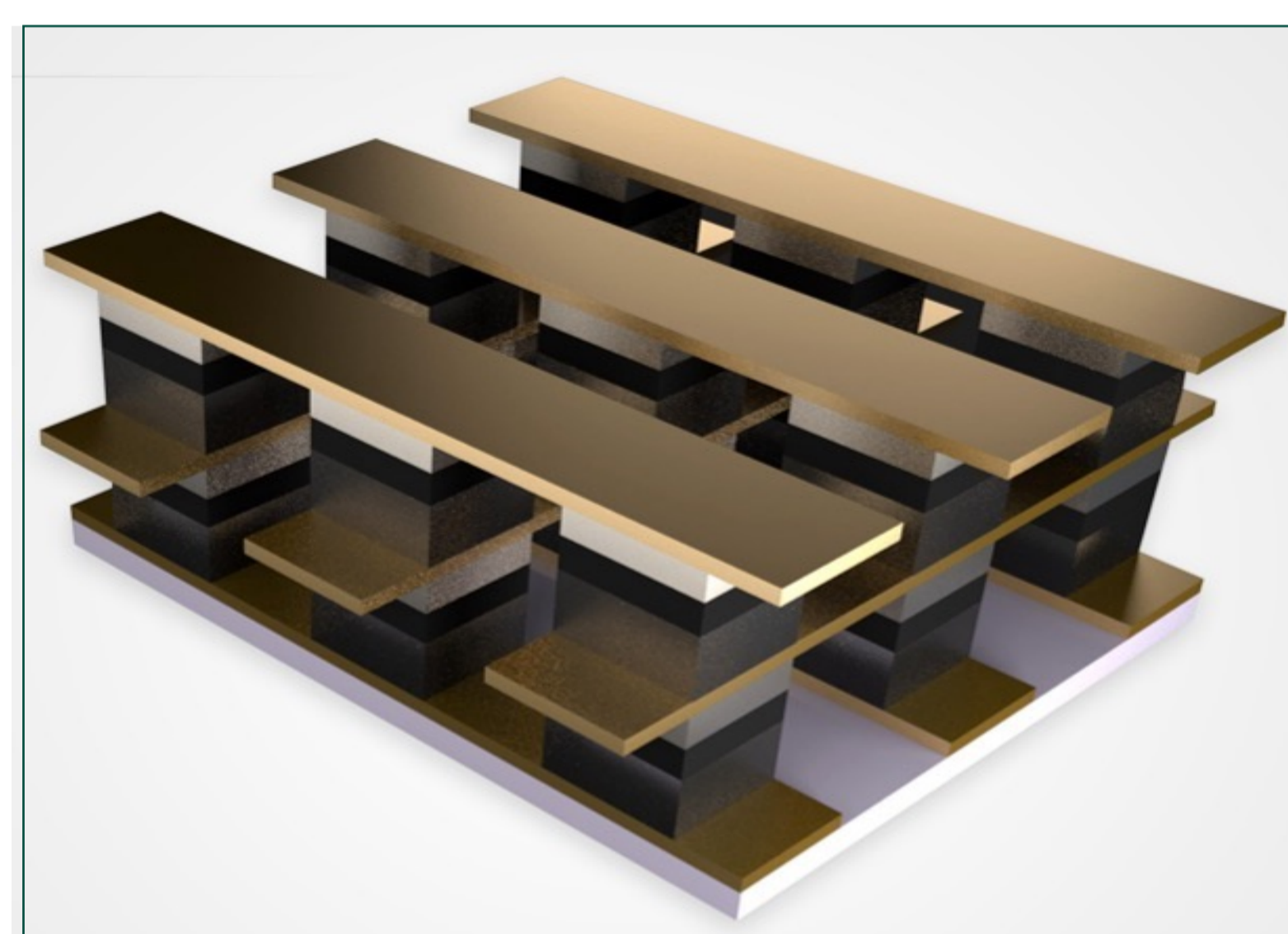
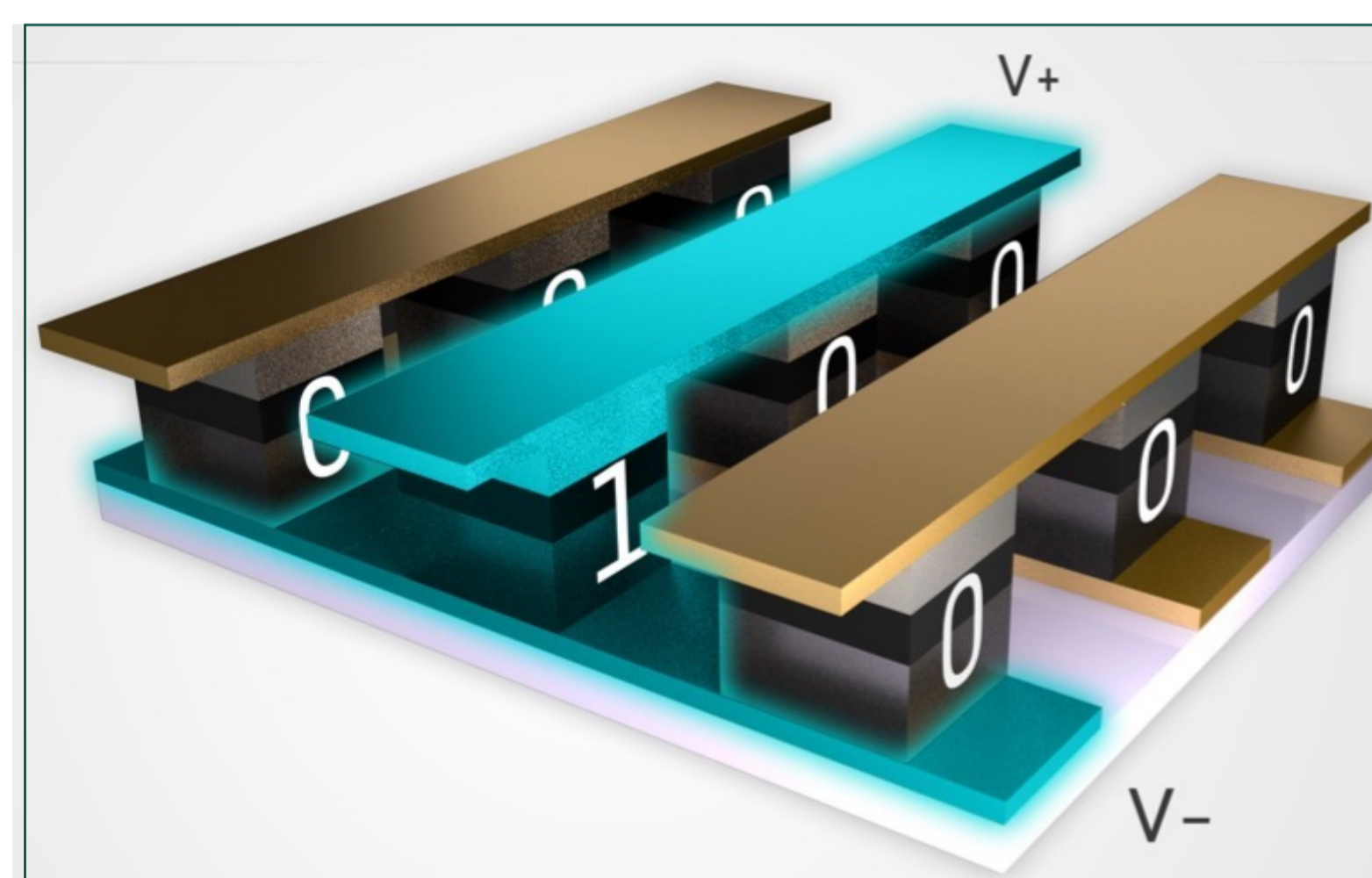
High endurance ($10^{12} - 10^{15}$)

- up to 10^8 more read/write cycles than FLASH

- double the lifetime of FLASH

Decreased Real Estate

- up to a factor of 5x reduction, suitable for SRAM applications



Non-volatile

- data retained when power is off
- no need to waste power to refresh

Low cost

- low number of lithography/etching steps
- improved etching conditions compared to STT-MRAM

High Manufacturability

3D scalable

High magnetic field resistance

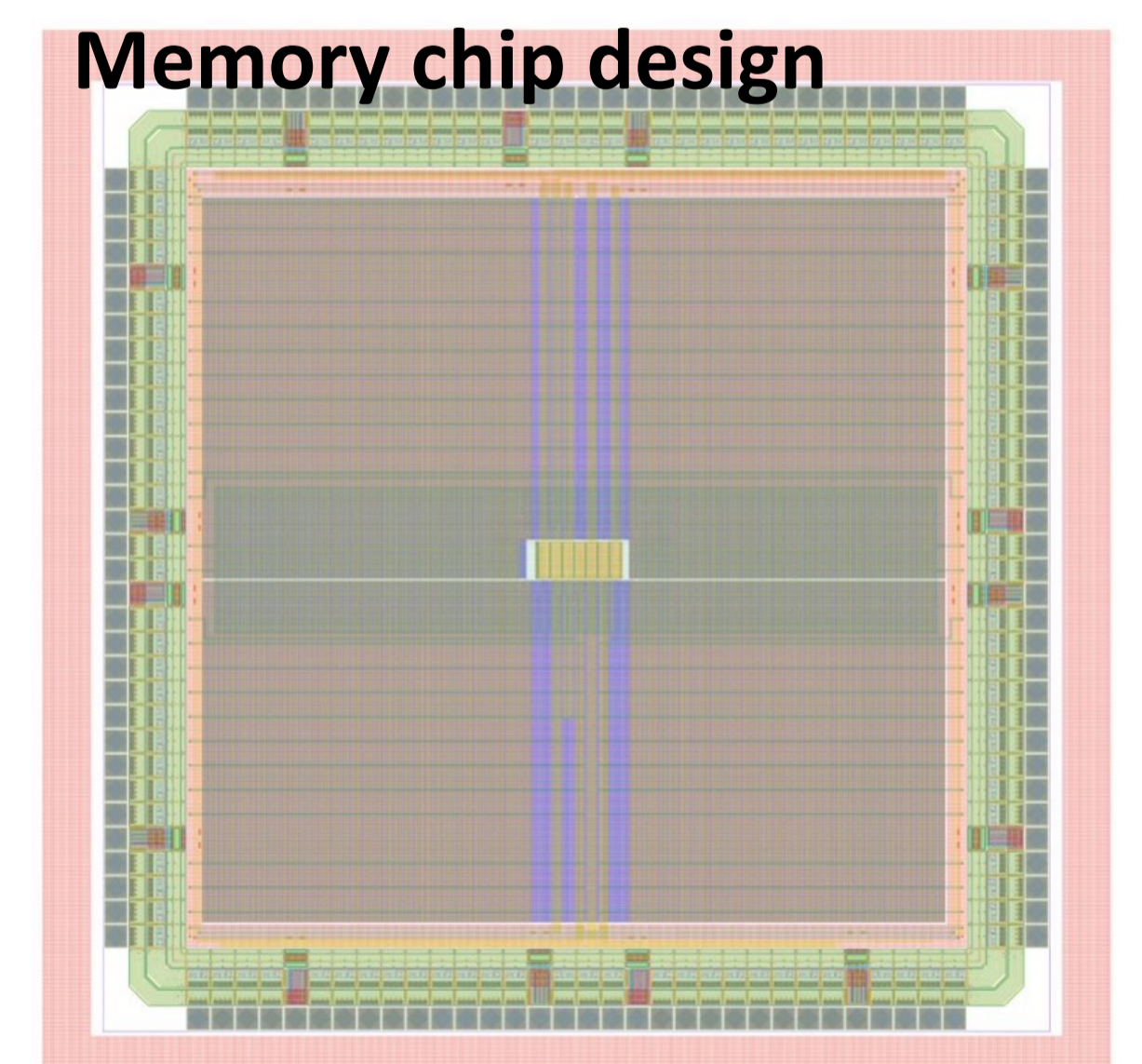
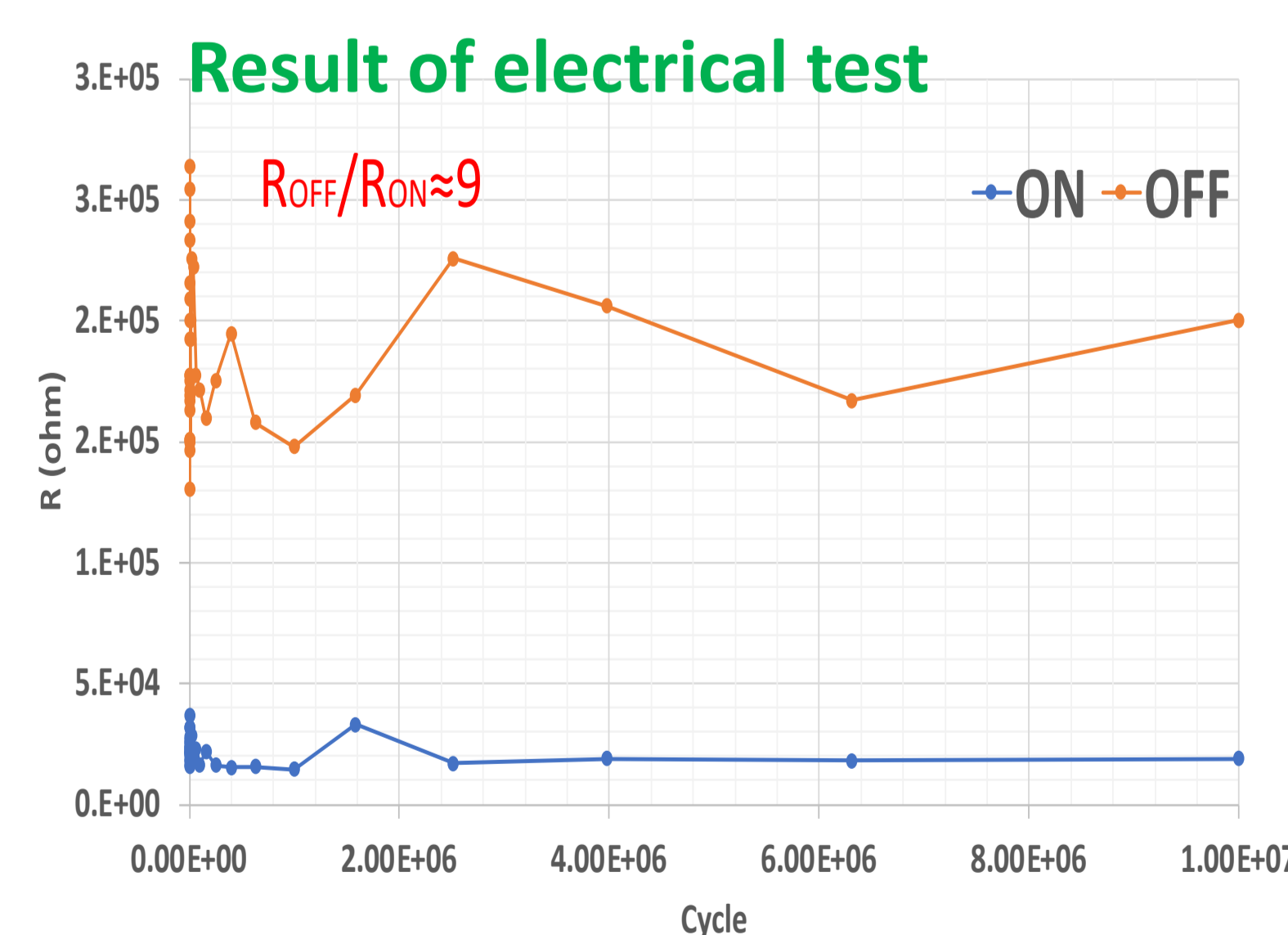
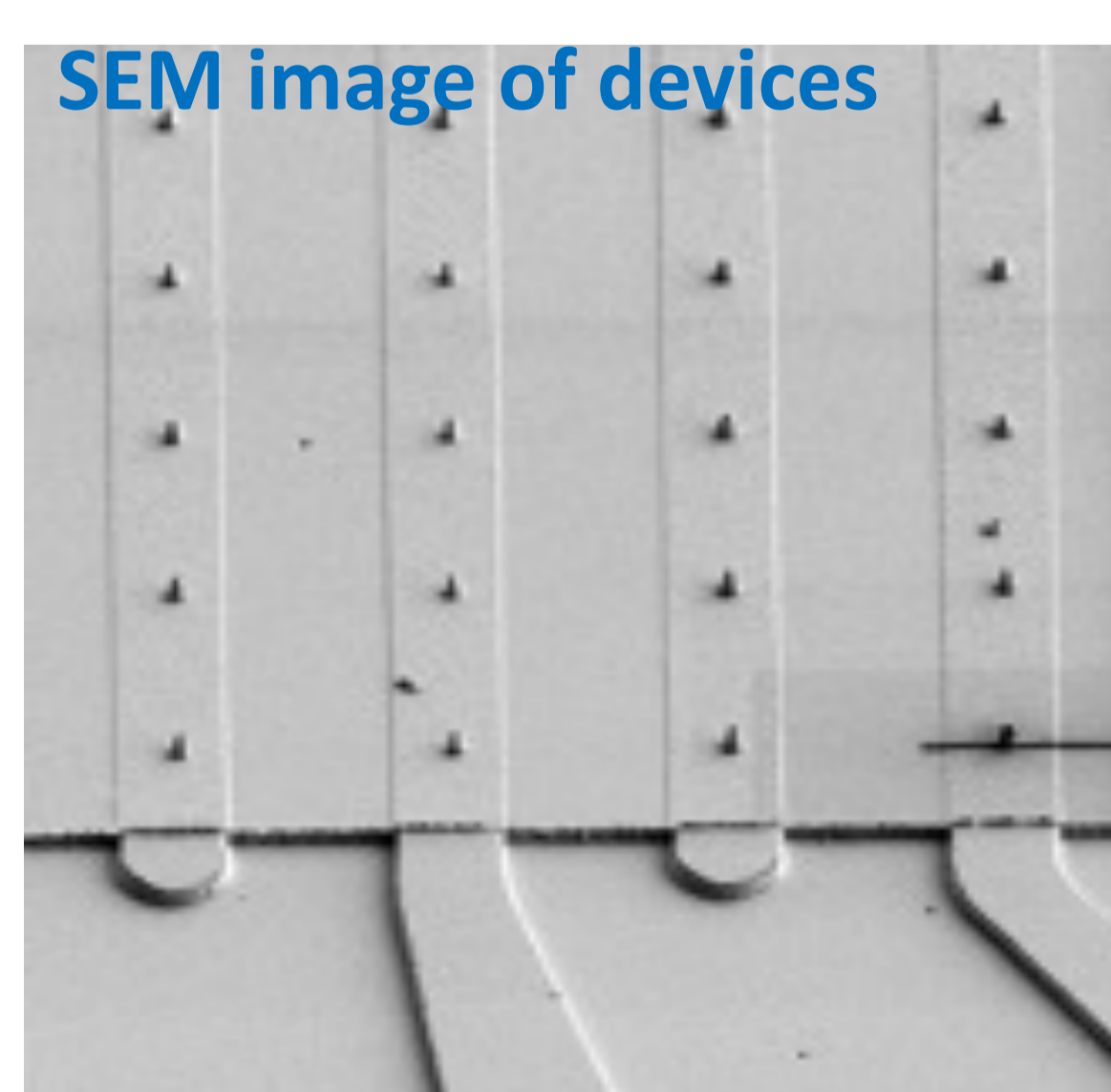
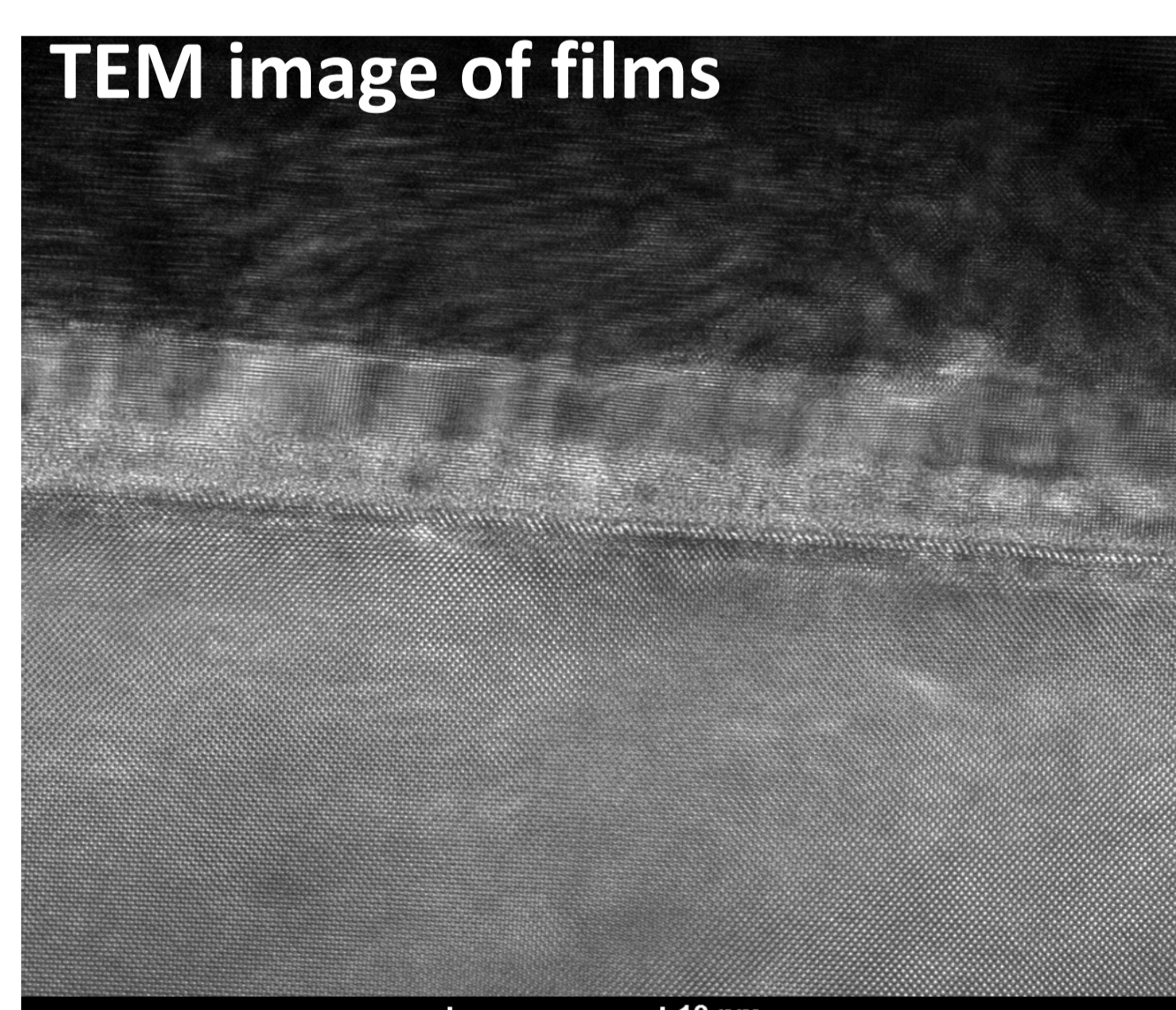
- up to 6 Tesla

Green technology

- abundant non-toxic materials

Our Activities

LoMaRe team has extensive experience in nano device fabrication, device testing, computer modelling and chip design.



As a fabless semiconductor company, the R&D at LoMaRe heavily relies on advanced semiconductor equipment to make the cutting-edge progress we require to stay ahead. In collaboration with Royce and Imperial College London, LoMaRe can access a wide range of equipment to advance development, especially the electrical testing facilities. The collaboration project involves performing a series of electrical tests on each single NVM prototype device under normal operating conditions and obtaining statistics of the device performance. The analysis of test data guides our fabrication and design teams at LoMaRe for optimising the devices.