

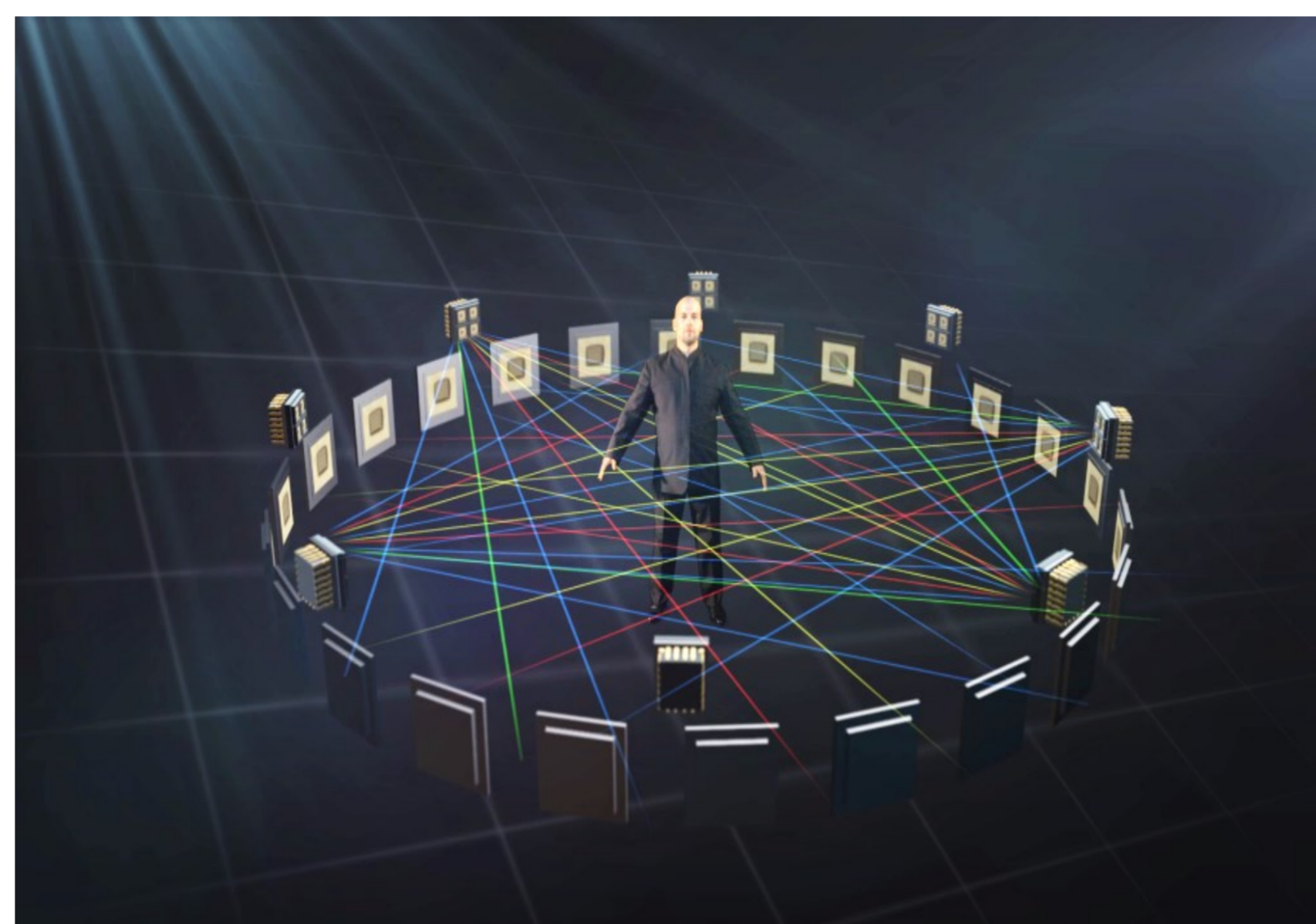
NEXRAY - Next Generation X-Rays

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Novel X-ray Systems: Concept and Applications

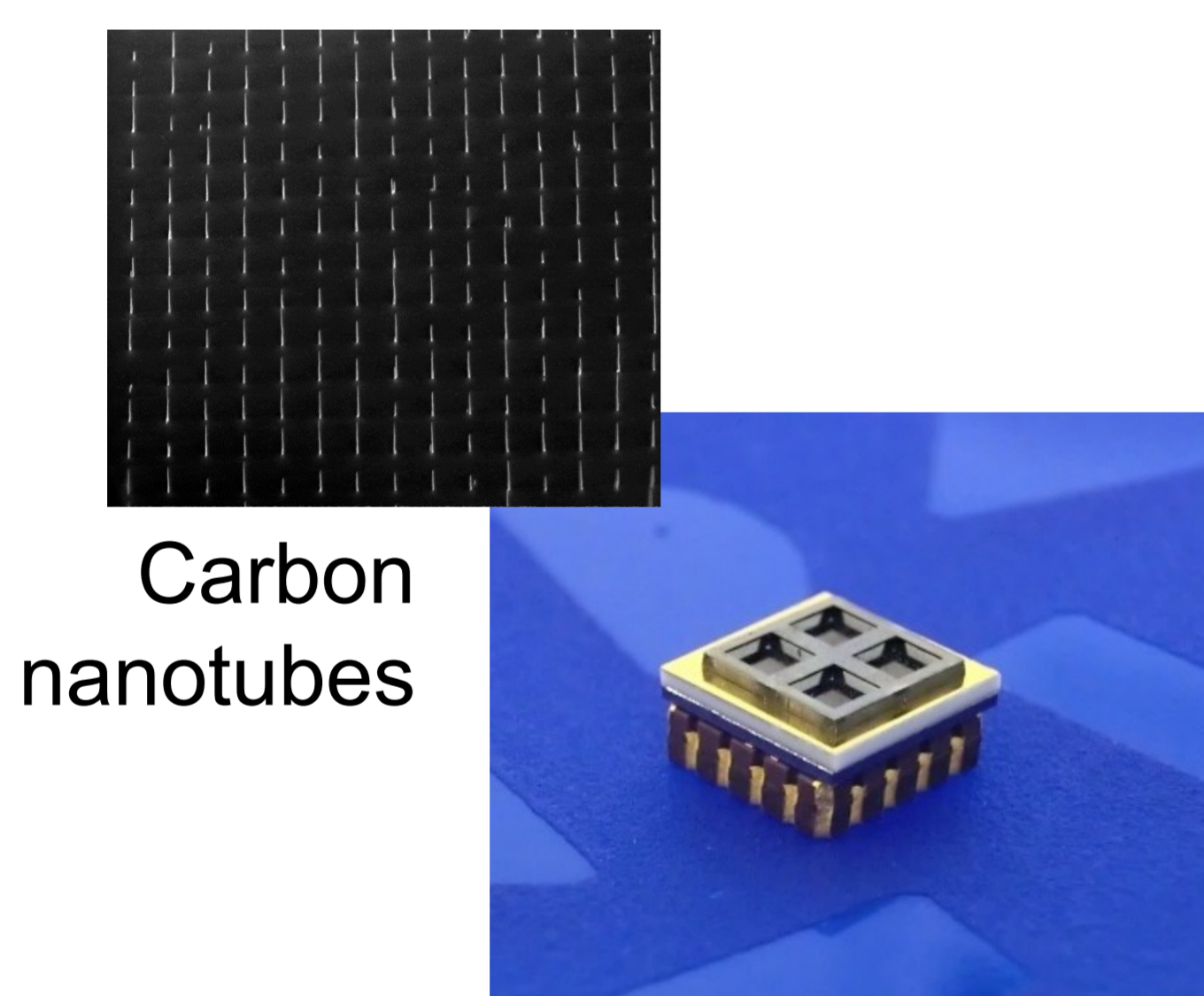
- Pocket X-ray modules enabling
 - Large area or pixelated X-ray sources
 - Pulsed operation of X-ray source (up to GHz frequencies)
- Smart and economic X-ray detectors
 - Based on a ground-breaking semiconductor integration technology
 - Facilitating energy resolved X-ray imaging



- Applications:
 - Miniaturised X-ray systems
 - Fast static CT for emergency medicine or in-line product inspection
 - Imaging of fast phenomena
 - X-ray time of flight imaging

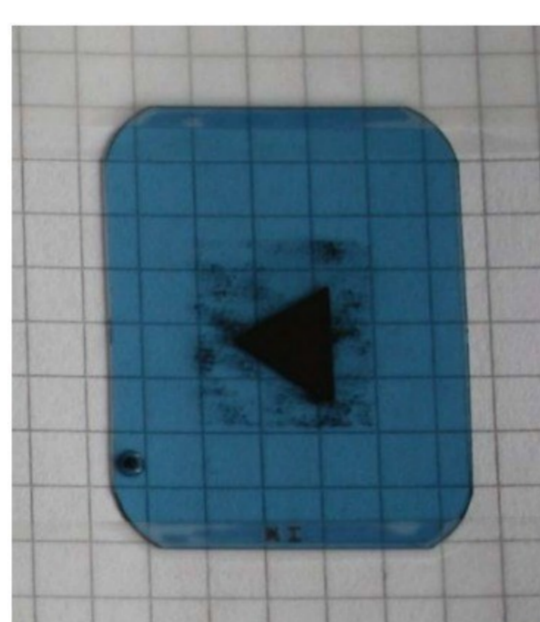
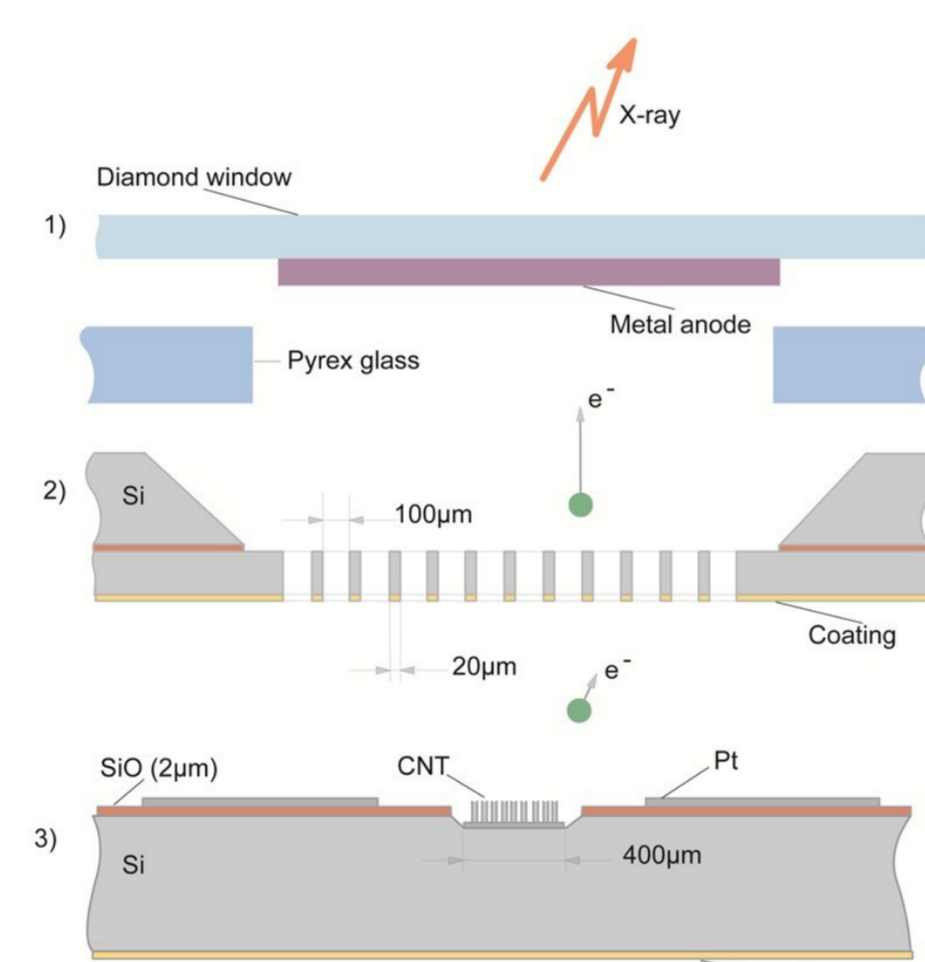
Pocket X-ray Tubes

- Cold field-emission of electrons with CNTs
- Miniaturised design based on MEMS technology



Carbon nanotubes

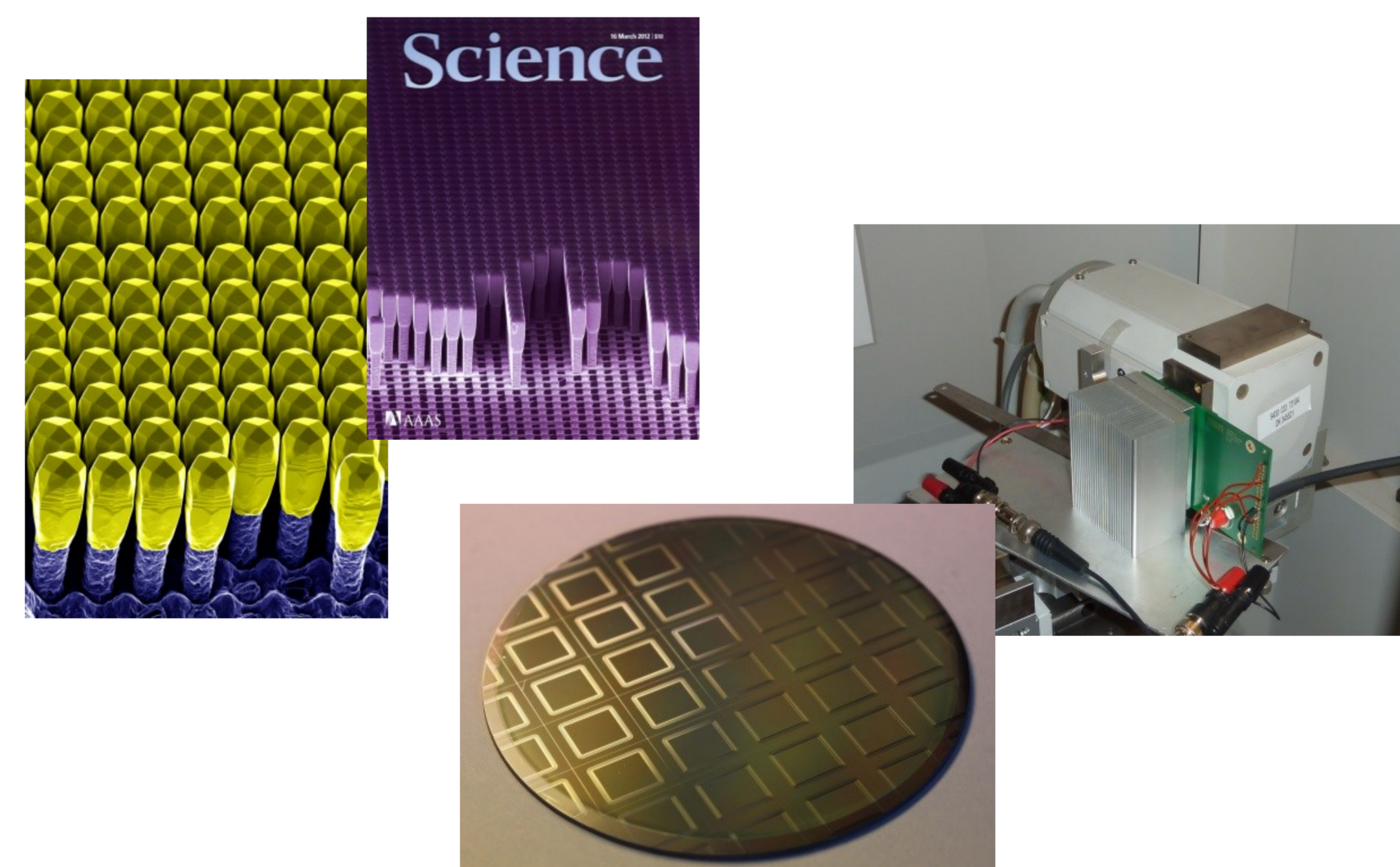
An array of 4 miniaturised sources



A dental X-ray film proving that X-rays were emitted

Monolithic X-ray Detectors

- Direct detection of X-rays in a Germanium layer
- Monolithically integrated on a CMOS wafer
- No requirement of bump-bonding



The growth of thick epitaxial Germanium layers in combination with smart CMOS electronics allows for versatile and economic detector solutions

Industrial Interest



PHILIPS Healthcare technology scouts identified NEXRAY as **one of the groundbreaking concepts of the last 10 years**
Jan W. M. Jacobs (Innovation Manger X-ray) and Patrick Etyngier (Head Clinical Research Board Europe)