

**EMBERION**





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# Nanotechnology based infrared imagers

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EPIC Online Technology Meeting on IR imaging for Security and Surveillance

# Emberion

A team of 26 top experts representing a unique combination of skills and experience:

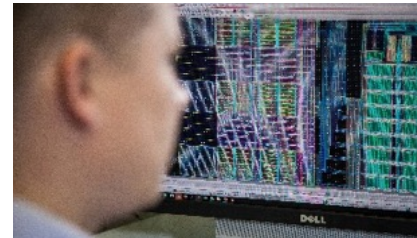
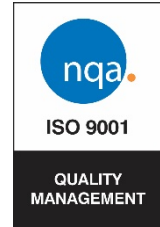
- Novel nanomaterials and CMOS integration
- Product creation and applied research
- Backgrounds in both SME and corporation environments

Working in two R&D hotspots:

- Nanomaterials and sensor development in Cambridge, UK
- Electronics and system development in Espoo, Finland

Efficiently networked to both research and production partners

- Established business relationship with selected CMOS foundries
- An active member of European Graphene Flagship program and a member with access to the Cambridge University Graphene Centre



# Product offering



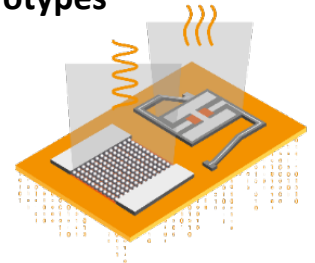
## VIS-SWIR camera cores

- Novel image sensors based on graphene and nanocrystalline photonic absorber monolithically integrated on in-house designed ROIC
- Cost-efficient, semi-fabless wafer-level manufacturing process
- **A wide and tunable spectral range: 400 – 2200 nm**
- Large dynamic range and excellent noise performance
- Applications in night and machine vision & multi- and hyperspectral imaging
- **Samples for VGA image sensor integrated into a camera available late 2020**
  - 400 – 2000 nm spectral range
  - 20 x 20 um pixel
  - Speed up to 100 fps
  - TEC-cooled
  - Optional housing compatible with off-the-self lenses



## Superpixel concept

- Superpixel architecture: integrated photo and thermal detector imaging array
- **Covering visible to thermal range with a single image sensor**
- Global electric shutter, scalable to large sensor arrays, non-cryocooled
- Various applications in security and surveillance, such as **long-range imaging in limited visibility conditions**
- Currently a research activity: **demonstrated as proof-of-concept prototypes**



# Looking for collaborators



- Vision system integrator partners
- Pilot customers for technology feasibility studies
- Multi- and hyper-spectral camera development partners
- System integrator & end-user partners for focused public funded joint projects
- Feedback on our product specifications