

Cadmium in infrared detection

Cadmium is a key and irreplaceable ingredient in infrared detection technology. It is combined with mercury and tellurium to produce the MCT (Mercury-Cadmium-Tellurium) infrared detection material.

When layered on a sensor, an ultra-thin coating of MCT of only a few microns enables high-quality infrared detection. Each sensor contains approximately 0.5 mg of cadmium. The quantity of cadmium present in all infrared detectors produced every year in the world is less than 10 grams.

Key applications of MCT technology

Infrared detection is a crucial technology in a variety of applications. Historically it was first used in military and space-based deployment. Over the decades it transitioned to industrial and commercial applications, for the preservation of resources and the protection of lives and properties. Examples include the surveillance of industrial sites, gas leak detection, medical imaging, meteorological observations, environmental and agricultural monitoring and surveillance, pharmaceutical formulation development, and plastics recycling. Art restoration experts are now using infrared cameras to examine paintings for artifacts under the pigment, such as original line drawings made with charcoal pencil or chalk.

In a nutshell, the current application sectors for MCT-based infrared cameras are:

- Military (50%): Airborne, ground-based, naval
- Space (20%): Satellite programmes, surveillance, early warning systems, meteorology, agriculture surveillance, global warming studies, planetary and asteroid studies
- Commercial (30%): Surveillance, thermography, hyperspectral imaging.

Benefits of MCT technology

MCT technology is used in so many different application areas on account of the multiple benefits it displays. It is a proven, reliable and readily available technology that comes with a competitive cost.

Big in space

MCT is the only IR detector technology covering the entire infrared spectrum (from 0.7 μm to 20 μm) and having a very large space heritage, hundreds of successful space missions having MCT detectors on board.

Strategic importance of MCT technology

MCT technology is strategically important for the European Union. The market for MCT infrared detectors is growing and continues to create jobs. Currently, around 1200 people are employed in this sector in the EU, notably at the manufacturers of MCT detectors Lynred in France (previously called Sofradir) and AIM in Germany

More information

To discover more about cadmium, its use in MCT material, and the infrared applications that are possible, check out the website of the [International Cadmium Association](http://www.international-cadmium-association.org). Address your specific questions to contact@cadmium.org.

