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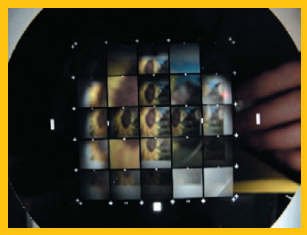

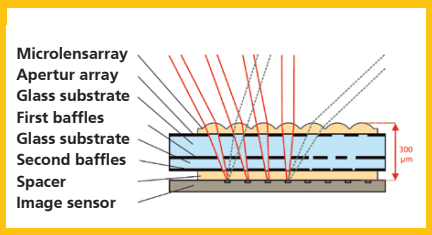

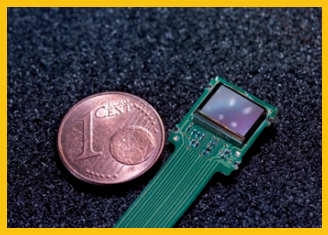

1 2 3 4

1 Wafer with 5 x 5 ultra-thin objectives before dicing.
2 Schematic optics layout.
3 Fully packaged ultra-thin imaging sensor.
4 Pictures acquired with an artificial apposition compound eye camera with 150 x 100 pixels, FOV = 80° x 65°.

INSECT INSPIRED IMAGING FOR ULTRA-COMPACT VISION SYSTEMS

Technical Concept

- Microlens array on front side of thin glass substrate with a thickness according to focal length of the microlenses
- Integrated on an optoelectronic image sensor (CCD, CMOS) with different pixel pitch compared to the microlens array
- Pitch-difference enables different viewing directions of each optical channel
- Channel-wise adapted microlenses for correction of aberrations
- Optical isolation of channels for the suppression of optical cross-talk

Exemplary Parameters

- Optical system length 300 µm
- 150 x 100 channels / pixels
- Channel size 50 µm
- F/# = 2 to 4
- Field-of-view 80° x 65°
- Pixel size 3µm

Wafer-Scale Technology

- Origination of lens arrays by reflow of photoresist or laser lithography
- Structuring of aperture arrays on thin glass substrate (lithography)
- UV-molding of lens arrays in inorganic-organic hybrid polymer
- Dicing, assembly with CMOS-imager

Our Offer

- Optical design, prototyping and characterization of microoptical imaging systems for custom-specific applications
- Provide imaging solutions for tightest working spaces

Typical Applications

- Machine vision, Sensors
- Security and surveillance
- Medical imaging

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