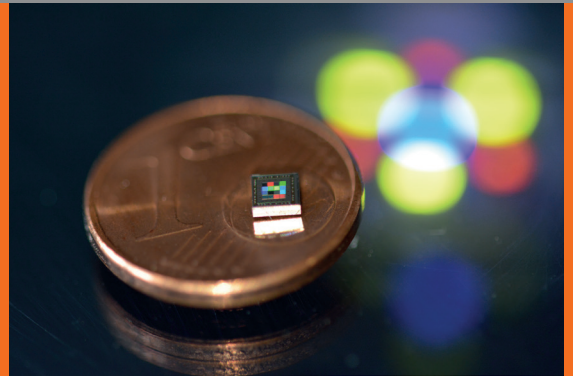




1 Microscope image of a color sensor chip

2 Chip area of a prototype is approximately 5 mm²

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PLASMONIC COLOR SENSORS FOR LED MONITORING AND COLORIMETRY

While many applications require that objects be measured to determine their color coordinates, conventional technology is often too costly, especially when the application calls for large numbers of sensors.

Functionality

To create the spectral selectivity, we utilize nano-structured metal layers in combination with a CMOS technology process. Through the excitation of surface plasmon resonance, we create a high degree of spectral selectivity. This approach creates the opportunity to configure the spectral functionality of a filter through the targeted use of perforated nano structures in the metal layers of the chip, which have a constant thickness.

Characteristics

- Realization of multiple spectral channels on a chip in a single process step
- Calculation of the CIE norm valent system X, Y Z coordinates and the chromaticity x, y values
- Accuracy $\Delta x, \Delta y < 0,002$ (equivalent to 2 MacAdam ellipses depending on the color location)
- 12-channel spectral estimation
- Integrated preamplifier with configurable gain and offset correction

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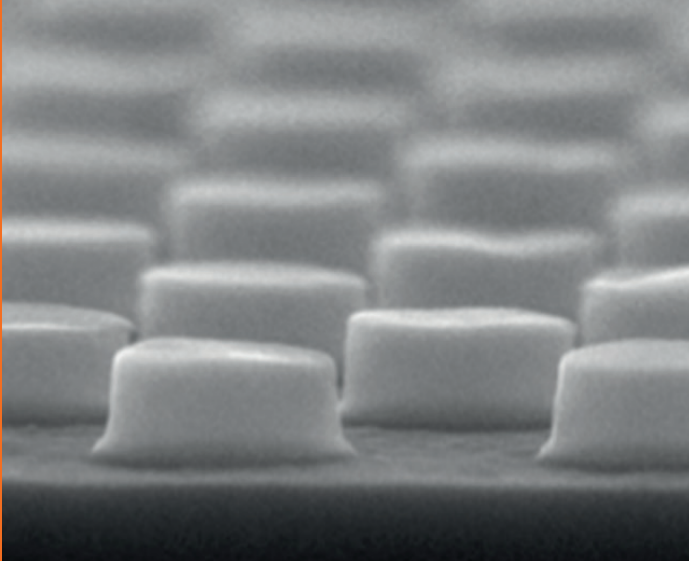
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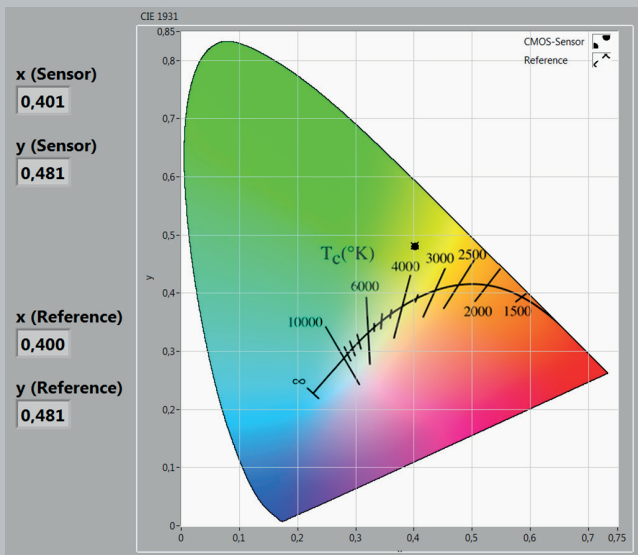
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3 Image of a nanostructure taken with a scanning electron microscope

4 Example of a color determination

Fields of application

- LED monitoring and control for a wide range of environments such as LCD backlighting and general lighting systems
- Color sensors for industrial automation and the automobile
- Configurable spectral functionality
- Miniaturized multispectral sensors for analyzing gases and liquids

Other applications

- The use of fine nano-structured wire mesh enables the realization of polarization filters for:
- Improved white balancing in cameras
 - High-resolution polarimeters without moving parts for chemical materials analysis
 - Polarization cameras for quality monitoring
 - Detecting manufacturing flaws such as microdefects in glass products
 - Road monitoring cameras with adjustable polarization for suppressing interfering reflections

Benefits

- High reliability thanks to monolithic integrated color sensor technology
- Cost-effective CMOS-based production process
- Customer-specific filter performance

Services

- Application-specific filter and sensor design
- Integrated signal processing
- ASIC development
- Feasibility studies
- Evaluation board for carrying out your own measurements
- Small-batch delivery