

MAZeT

ELECTRONIC ENGINEERING &
MANUFACTURING SERVICES



Application of JENCOLOR hyperspectral sensor testing liquids

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SENSORSYSTEME 2014

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- 3 Working principle of water test
- 4 Application experience with Primelab
- 5 Summary and outlook

MAZeT

ELECTRONIC ENGINEERING &
MANUFACTURING SERVICES

MAZeT GmbH

- **Management**

Dr. Wolfgang Hecker | Dr. Fred Grunert

- **Founded in 1992**

- **Employes: 96**

- **Headquarter:**

Göschwitzer Str. 32 | 07745 Jena | Germany



FROM ASIC TO SYSTEM

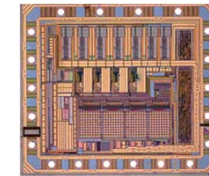
Opto-electronic sensors & components

- True Color sensor ICs and multi-spectral sensors
- Detectors and signal processing
- Evaluation boards & adaptation services



Chip design ASIC & FPGA

- Customer-specific circuitry development
analog | digital | mixed signal ASIC | ASSP
- FPGA design
- Fabless foundry services



Hardware & software design

- Development of electronic components
- PCB layout
- System and application software



Device design & assembly

- Device & component logistics
- Prototype and series production of customer-specific devices & components
- Industrial computer solutions
- Testing services

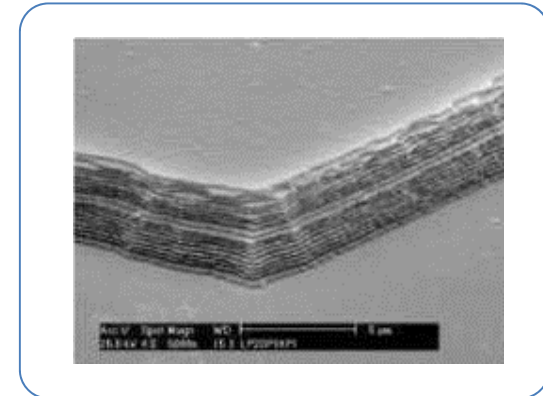


JENCOLOR FILTER TECHNOLOGIES

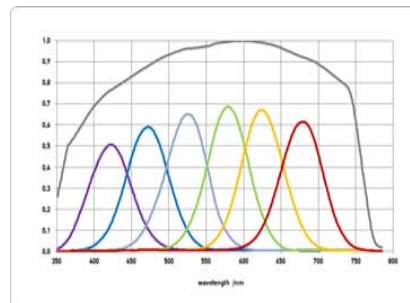
Via optical filter structures -
spectral sensitized silicon photodiodes

Dielectric (interference) filters:

- On-chip, micro-structured
- High transmission
- No aging drift effect
- Robust surface
- Extremely temperature-stable
- High filter slopes



TiO₂ / SiO₂ Filter Stacks



Water test

- **Before water test getting started:**

insert reagent (pill, powder) in the water probe. you will get a colored liquid

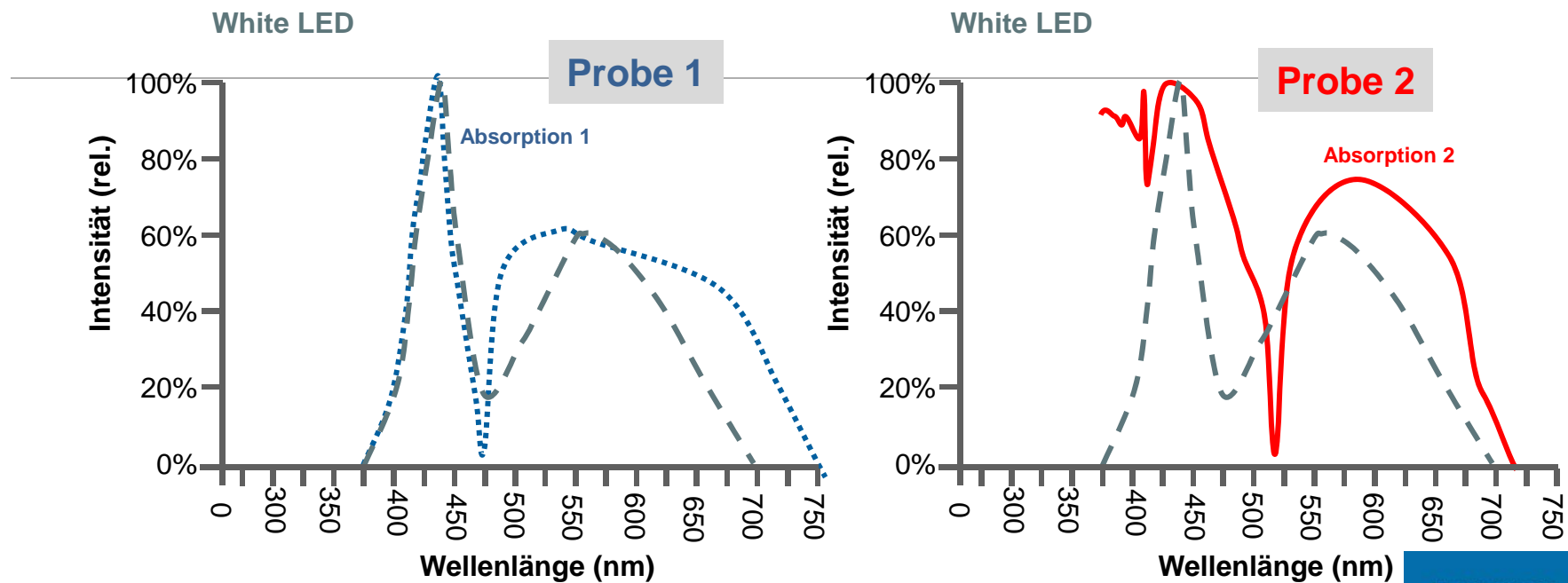
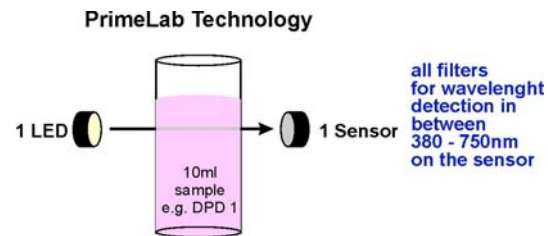
- **Visual color comparison:**

The colored water will compared against default color range using human eye

- **Color comparison using electronic device:**

The water probe will be measured with defined light source inside the device.
The value you get, may be reproduced at every time under same conditions.

Working principle „PRIMELAB“



Water test device „PrimeLab“

Steps:

- Insert reference probe
- Reference measurement
- Insert reagent (pill, powder)
- Measurement
- Calculate value
- Display measurement value



Water test device "PRIMELAB" & Measurement chamber

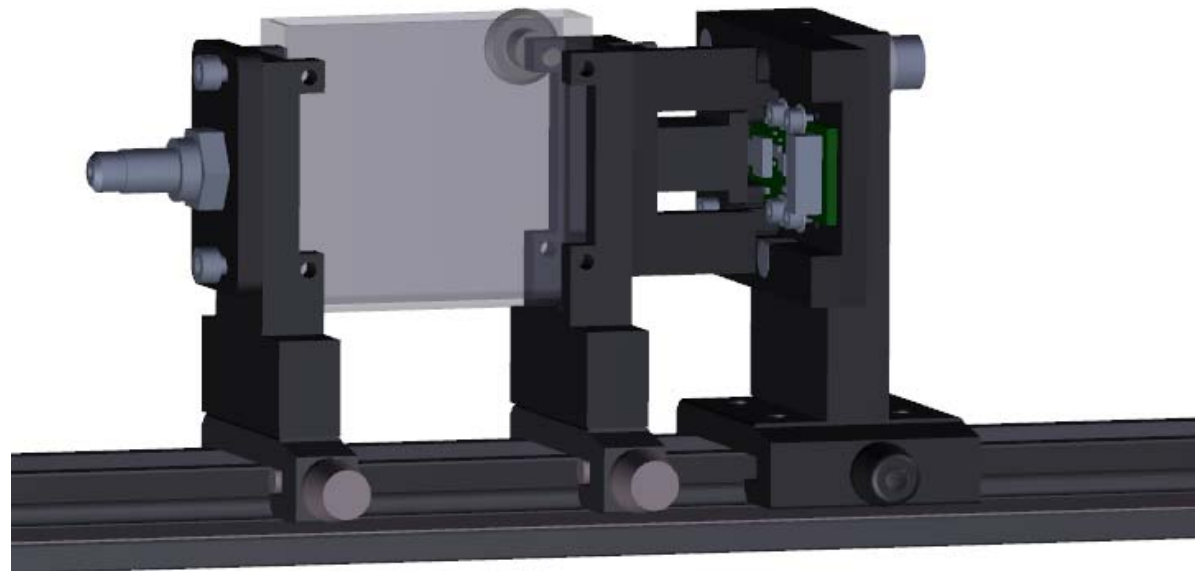


What can we measure today?

Aktivsauerstoff (O_2) Alkalinität (-m) Alkalinität (-p)
Aluminium Ammonium ($-NH_4$) Bor Brom Calciumhärte
Carbohydrazid Chlor Chlor-Dioxid Chlorid / Salz (NaCl) COD
Cyanursäure **DBNPA** DEHA Eisen Erythorbinsäure Fluorid
Gesamthärte Hydrazin Jod Kalium Kupfer Mangan
Methylethylketoxim Molybdat Natriumhypochlorit Nitrat
Nitrit ($-NO_3$) Ozon pH-Universal pH-Wert PHMB Siliziumdioxid
(SiO_2) Sulfat ($-SO_4$) Sulfid ($-S_x$) Sulfit ($-SO_3$) Phosphat ($-PO_4$)
Triazol Trübung Wasserstoff Peroxid (H_2O_2) Zink

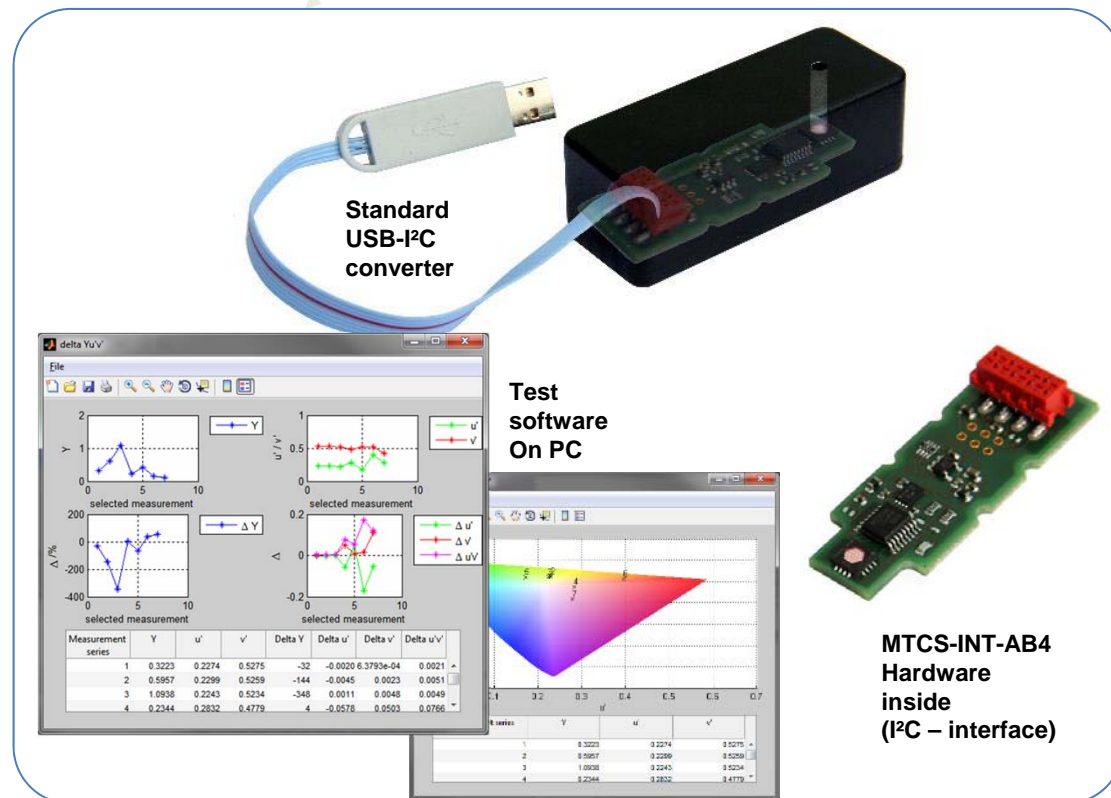
Additional application areas

- solvent
- Oils
- beverages
- fuels
-

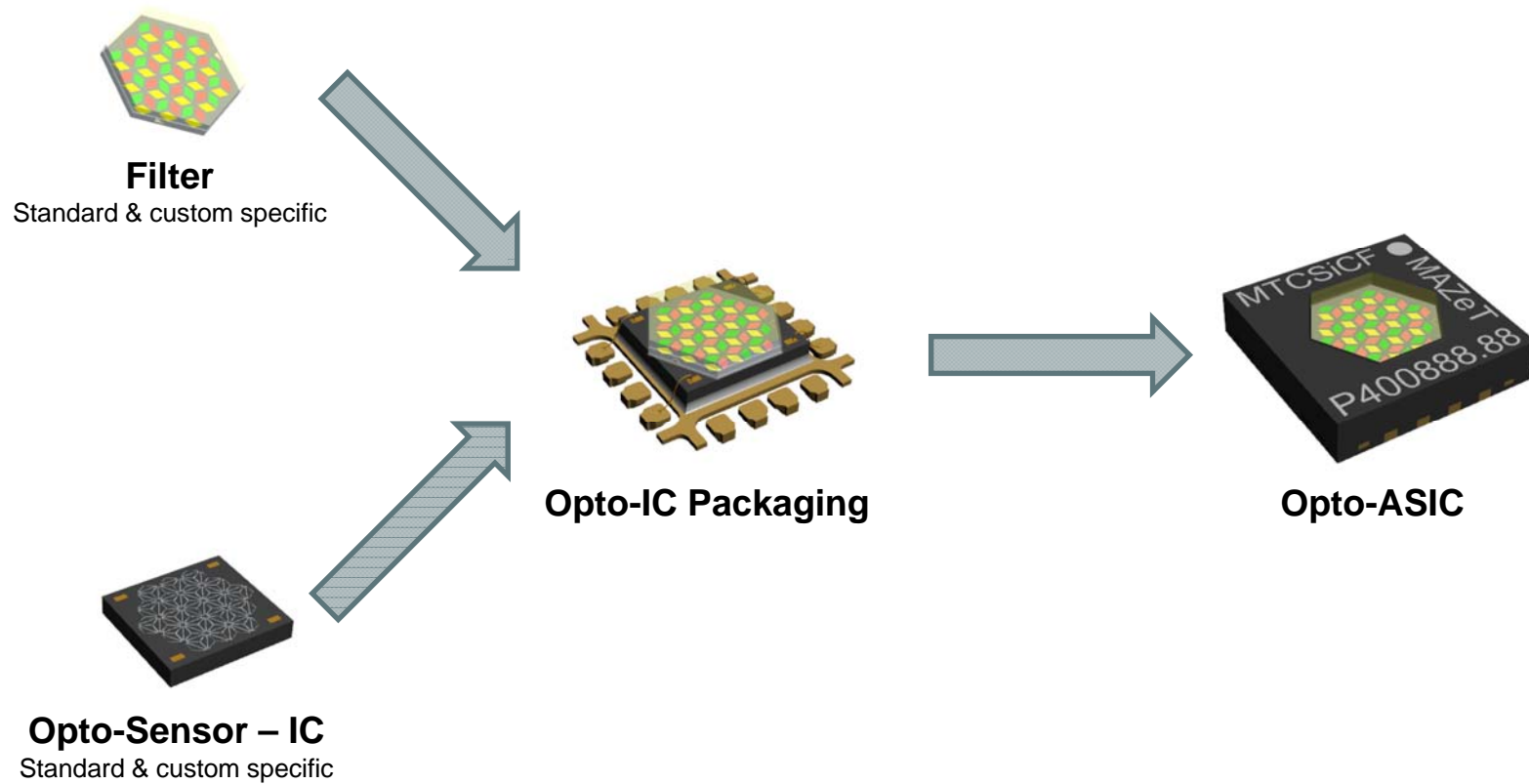


SUMMARY

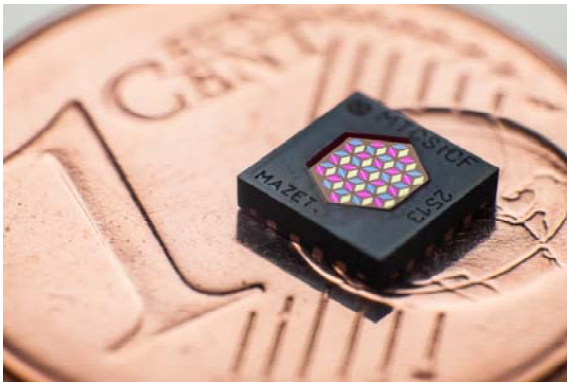
- Liquit analysis using hyperspectral sensor is possible
- Less effort by using JENCOLOR sensors
- Small device and less power consumption



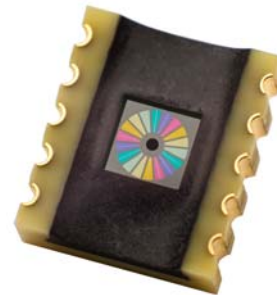
Opto-ASICs with custom specific spectral sensitivity



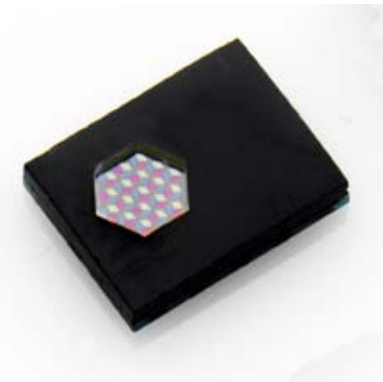
References



MTCSiCF



MMCS6CS

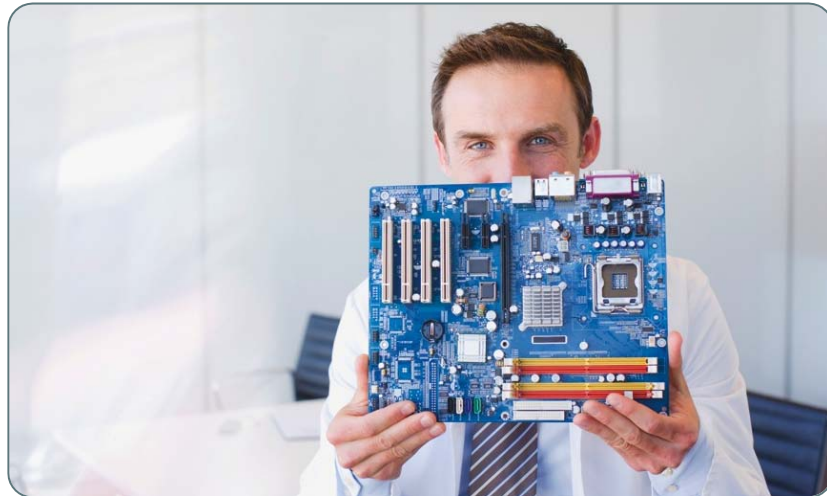


MTCS-TIAM4

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