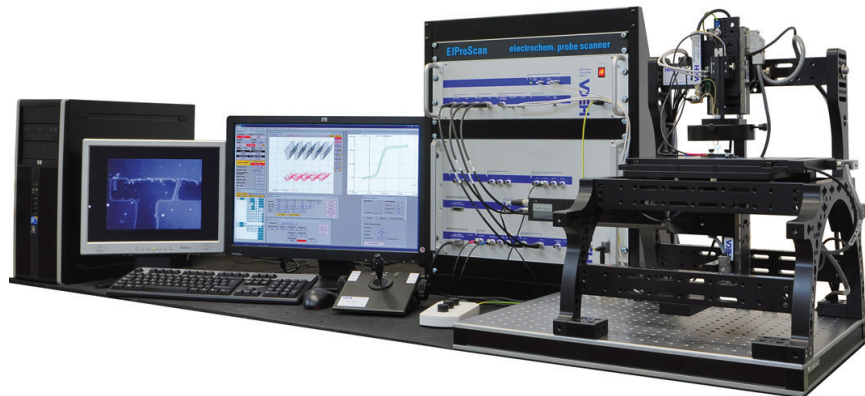


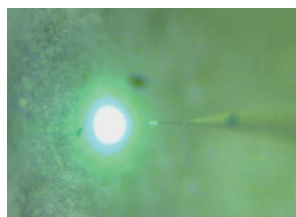
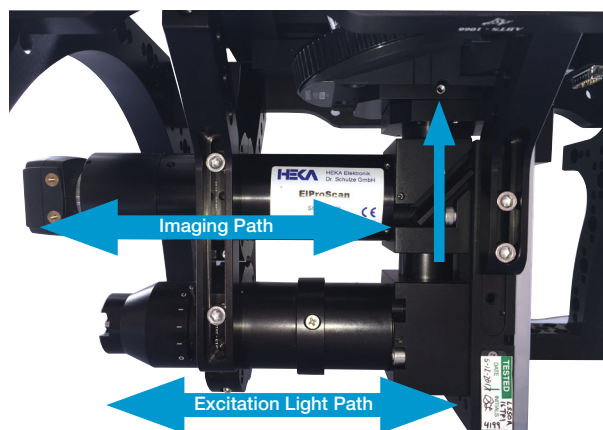


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## EIProScan Scanning Photoelectrochemical Microscope System



- ✓ EIProScan is the World's first commercial **SPECM** system for studying and imaging photoelectrochemical processes on micron and sub-micron scale.
- ✓ The innovative SPECM works for a wide range of materials and applications:
  - Inorganic semiconductors
  - Semiconducting polymers
  - Solar to electricity conversion (solar cells)
  - Solar to chemical energy conversion (Water splitting and CO<sub>2</sub> reduction)
  - Hybrid nanostructures
  - Organic photovoltaic materials
  - Photosterilisation, self cleaning surfaces
  - Environmental (air and water) remediation
- ✓ Unique optical design features inverted light illumination path precisely aligned with a scanning probe (incident light spot size can be controlled in micron range).



Camera view from top 45° imaging system



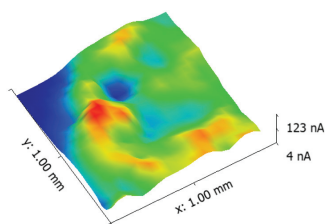
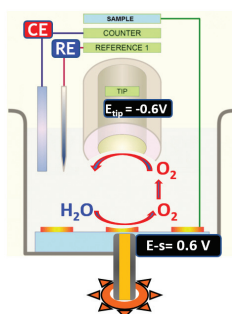
Camera view from inverted microscope optics focusing on sample and UME probe

HEKA Elektronik Dr. Schulze GmbH  
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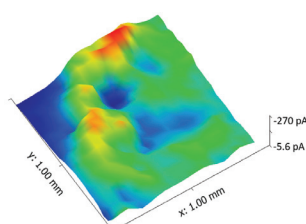
**SE** Smart  
Ephys  
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- ✓ Simultaneous mapping of microscopic distribution of photocurrent, IPCE/QE, photo-sensitive products or intermediates, and high-resolution surface topography within one scan.

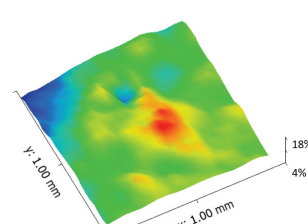
## SPECM Imaging of Water-Splitting by $\text{BiVO}_4$ thin film



3D map of photocurrents  
(Xeon light — full wavelength)

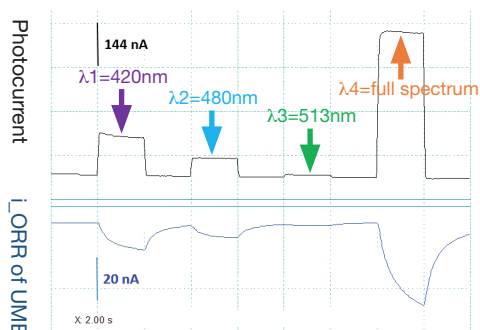


Distribution of  $\text{O}_2$  ( $i_{\text{ORR}}$ )  
from water-splitting

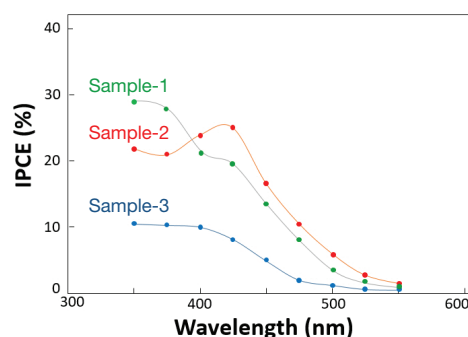


Derived 3D map of IPCE  
( $\lambda = 480\text{nm}$ )

- ✓ Seamless integration of synchronized SECM imaging with ultra-fast multi-wavelength light-switching.

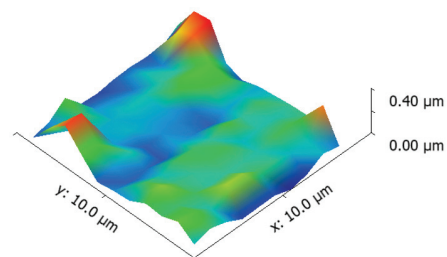
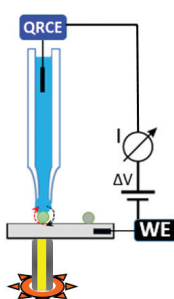
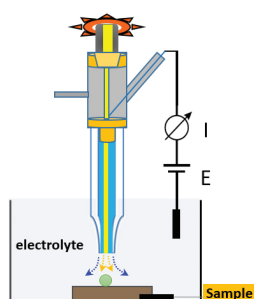


Synchronized dual-channel electrochemical recordings



Combinatorial screening of photo-efficiency

- ✓ 2018 new system supports both top and inverted illuminations via **optical fiber couplings** and **Opto-micropipette techniques** (with sub-pA sensitivity and nanoscale topographical resolution).



Topography of  $\text{BiVO}_4$  photocatalysts