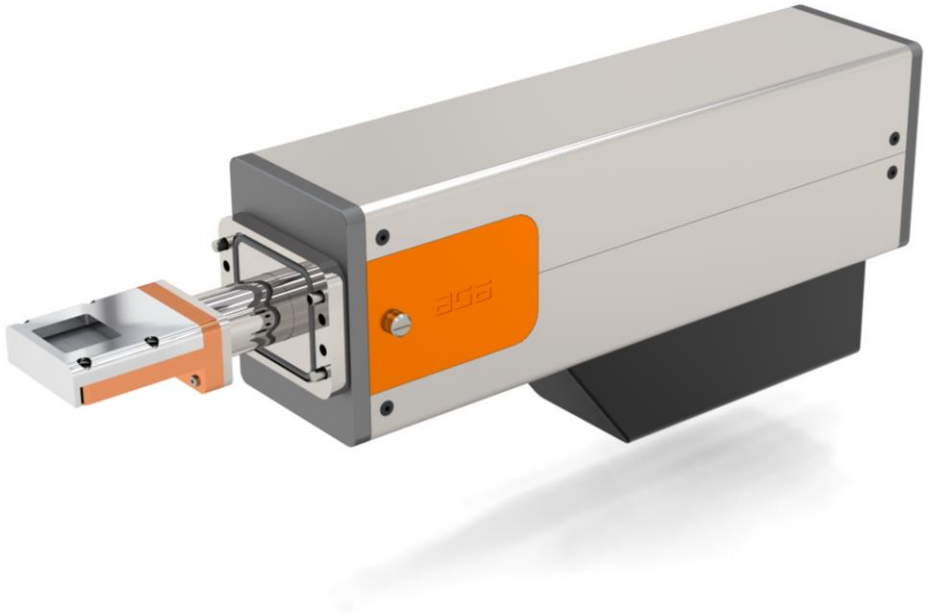
AMSTERDAM
SCIENTIFIC
INSTRUMENTS

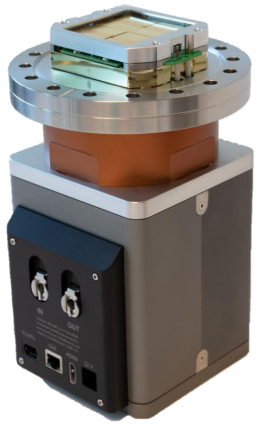
Hybrid Pixel Detectors for Pharma Processes



Yemliha Bilal Kalyoncu, PhD

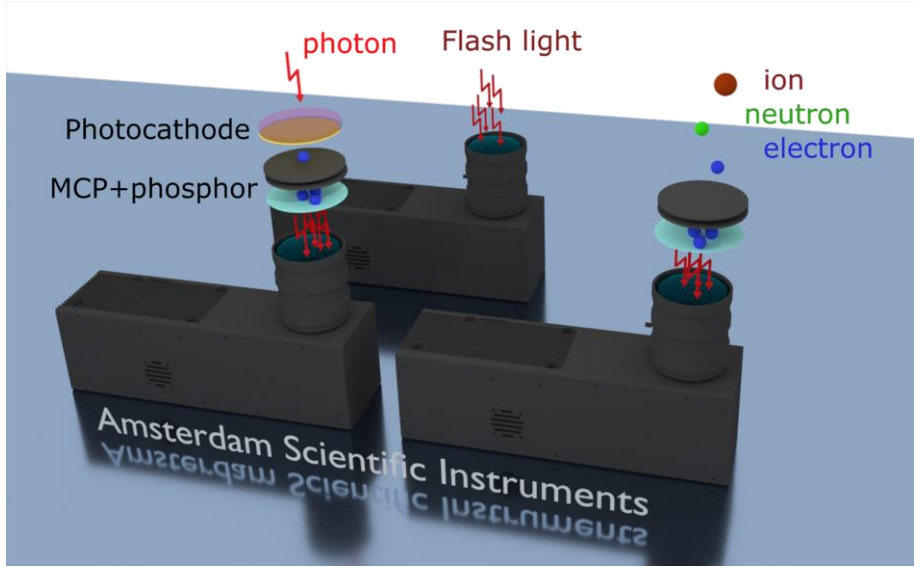
Hybrid Pixel Detectors

Electron Microscopy



X-ray

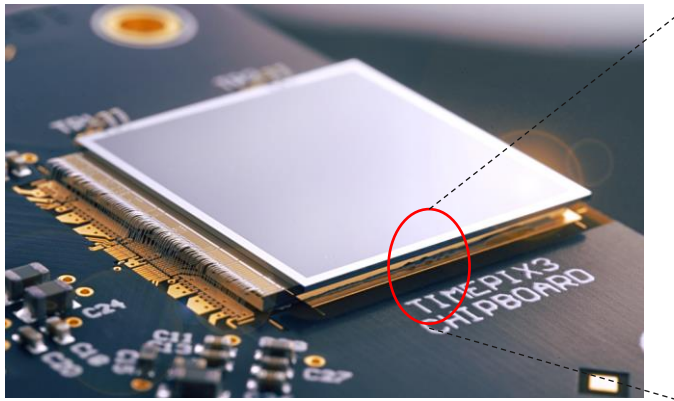
Timepix3Cam

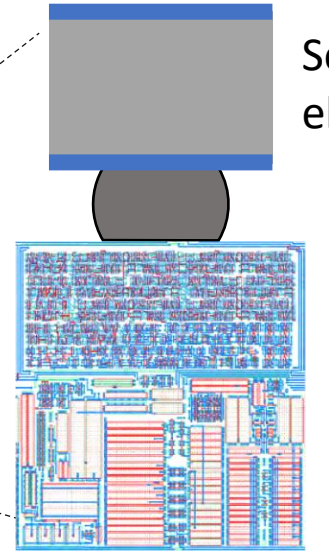


OEM

Hybrid Pixel Technology

Each pixel = Individual detector

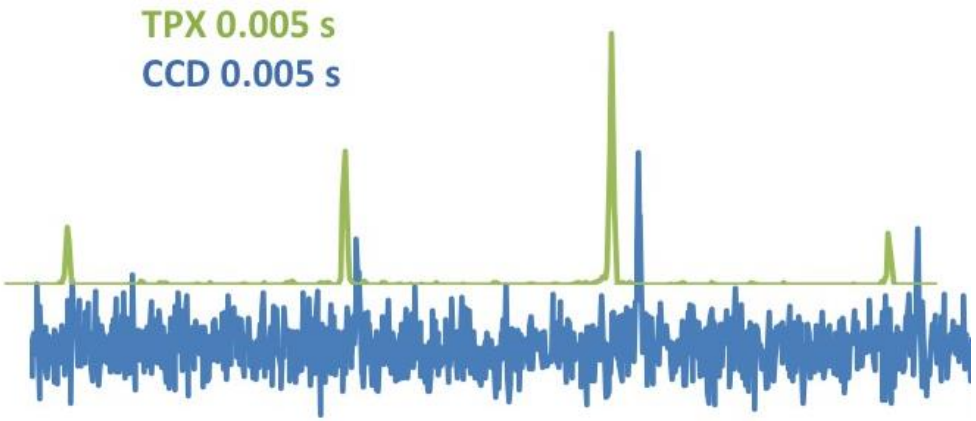




Sensitive element

Pulse processing element

High Signal-to-Noise ratio



High SNR → low dose → Less beam damage

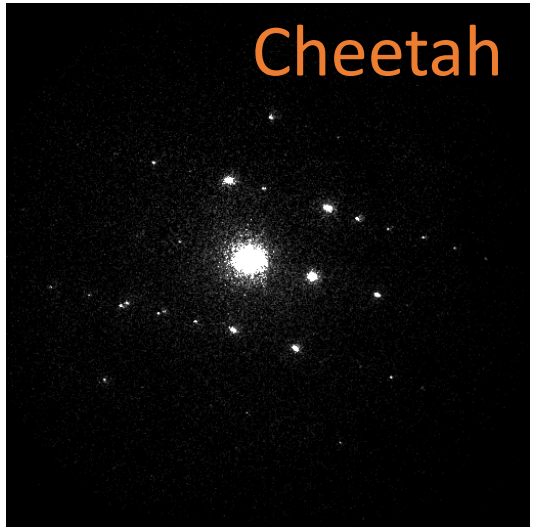
Beam Sensitive Samples

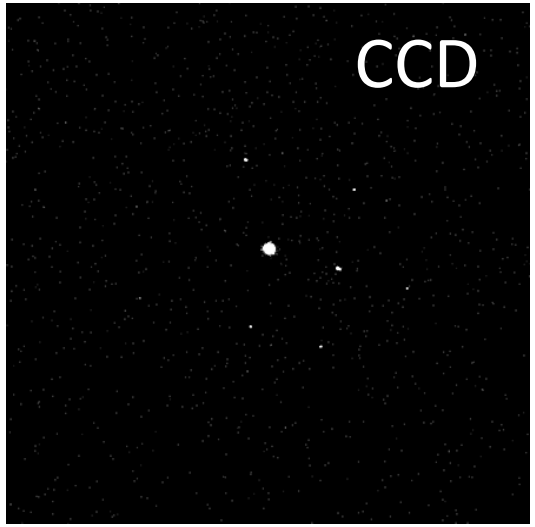
2000fps

Zero dead-time

1.56 ns resolution

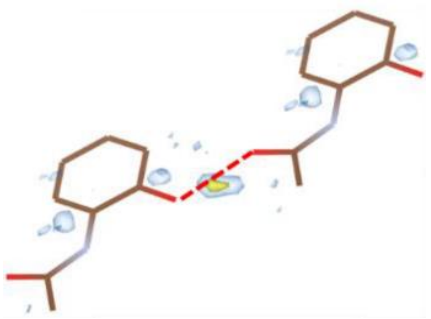
Electron detector: CheeTah

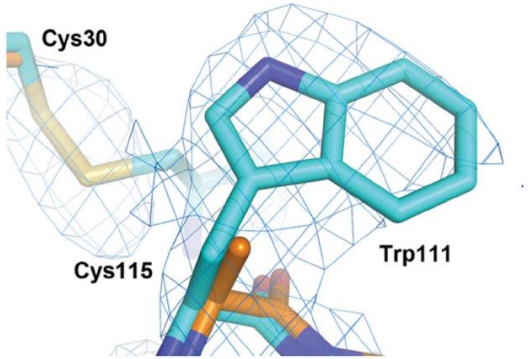




1 sec Total dose **0.05 el Å^{-2}**

Orthocetamol with H-bond





Hen-Egg white lysozyme

IUCrJ 6, 178 (2019)

"first pharma having an unknown structure solved ab-initio with 3D ED"

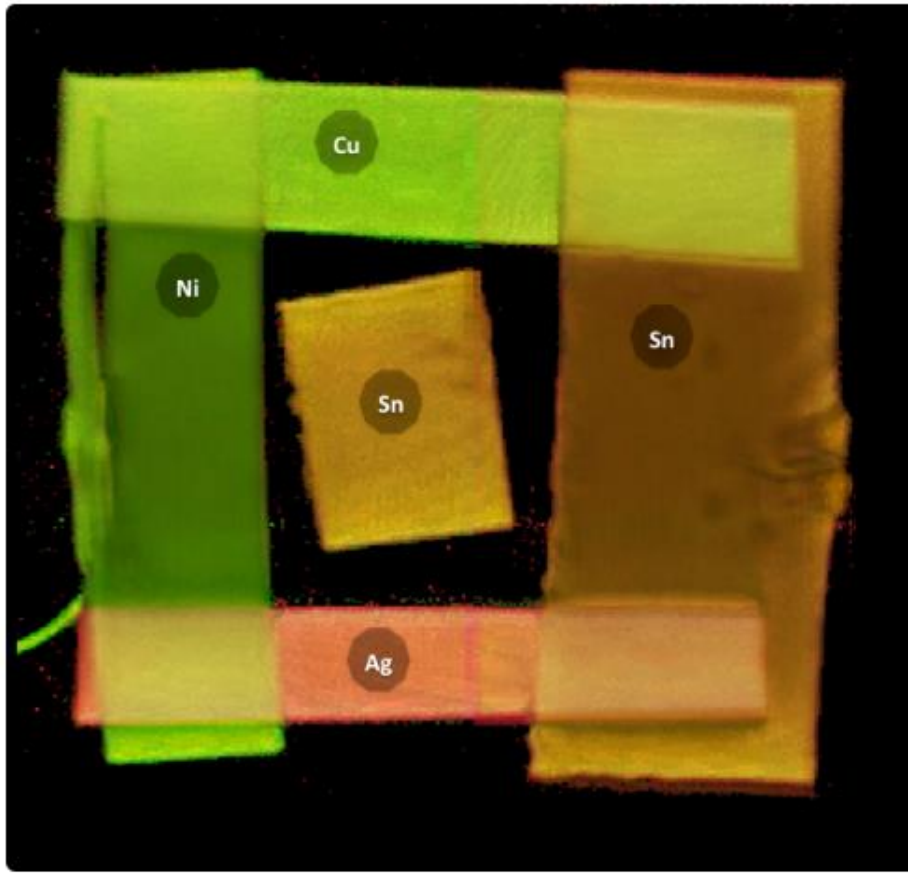
Angew. Chem. 58, 32, 10919 (2019)

X-ray detector: LynX

T3 - M3

LynX120

Spectral Imaging



Overlapping foils

Ni
Cu
Ag
Sn

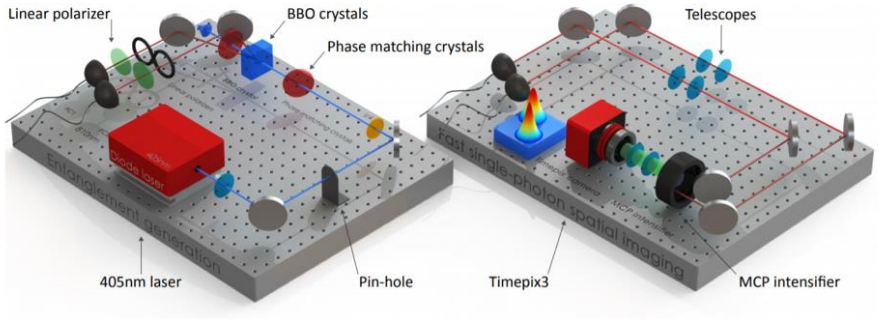
25 µm thick.

TPX3Cam

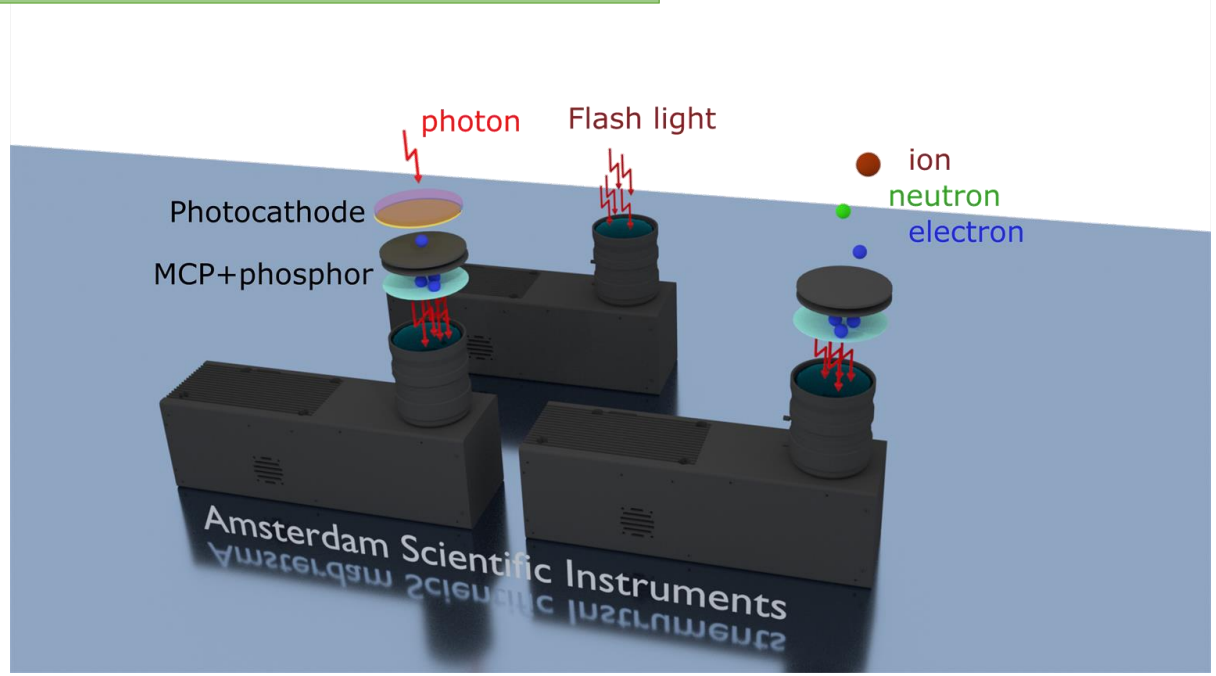
Optical camera

1.56 ns resolution

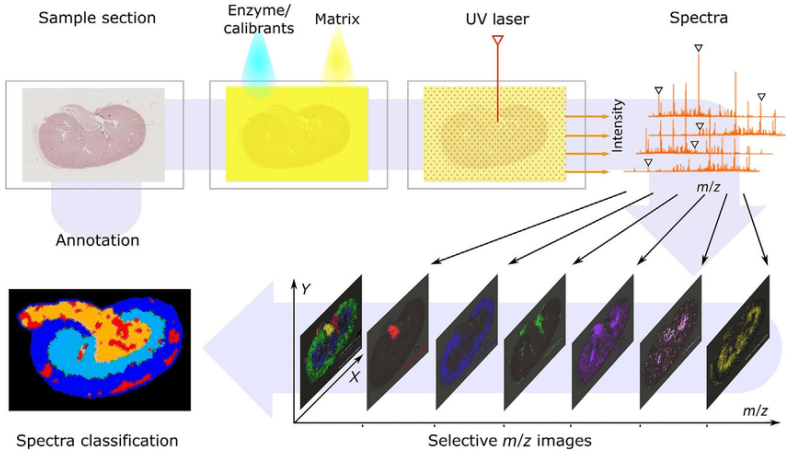
In-situ measurements



C. Ianzano et al.
Nature Scientific Reports 10, 6181 (2020)

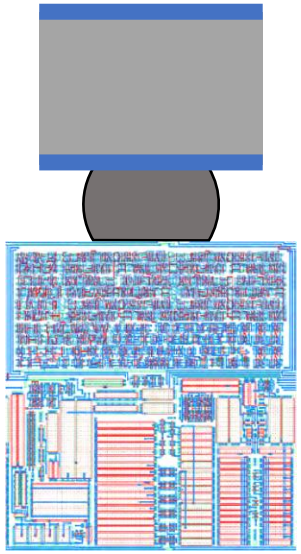


Mass Spectrometry Imaging



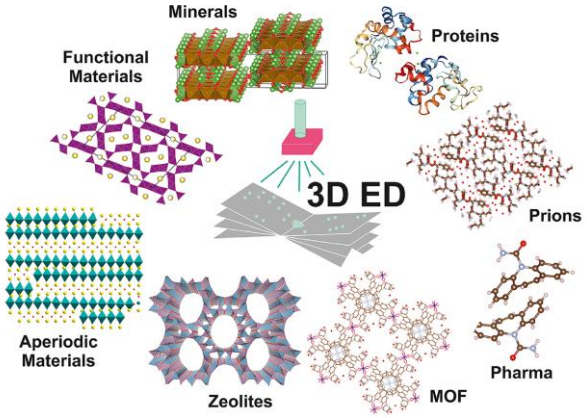
Summary

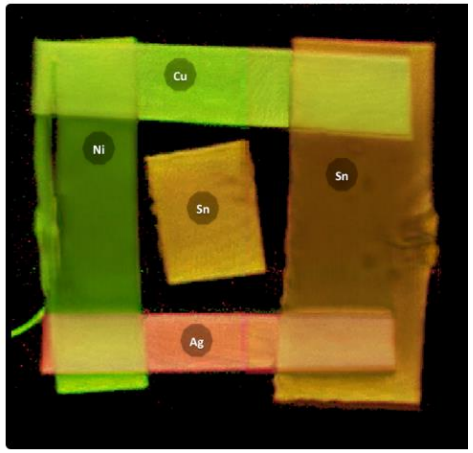
Technology



Products

Applications





Thank you