



EPIC



*European Photonics  
Industry Consortium*



**EPIC Purchased & Curated Market Reports**

# New, Purchased Reports



## 2 More in Coming in May 2022!



# 2021 End-of-Year Purchased Reports

**2021 Strategies Unlimited Laser Report**

**2021 YOLE LiDAR Report**

**2021 Yole SiPhotonics Report**

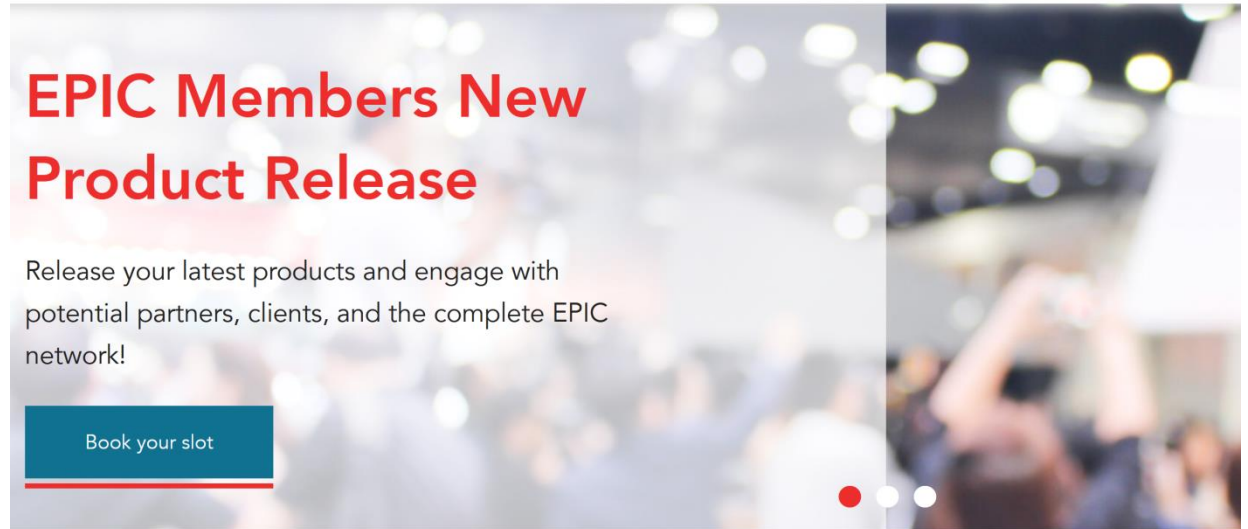
**2021 Yole Neuromorphic Networks & Applications**

**2021 Tematys (Avail May)**

**Amiplexus**



# EPIC Has a New Website



## Newly Developed for EPIC

- One subsection of these new pages is “Market Reports”
- To download the reports:
  - You may need to re-register
  - Automated process
- If you cannot download a report
  - Please contact me

# EPIC Curated Reports

- Focused on emerging technologies & applications
  - Products are entering early commercial stage or not well understood
- Based on interviews with ~5 members focused on different product aspects
  - What would they like in a report?
- Competition with Analyst Houses?
  - “One-off” reports
  - Forecasts will be raw
  - Tematys & Yole are both EPIC members
  - Feed to YouTube will be cut before forecast information provided



*Rare Image of Helical Drilling  
Source: Johannes Trbola*

# EPIC Curated Report Process

- NOT EPIC employees
- ~6 - 8 month (or longer) process
- Find person to create report
- Interviews with ~5 EPIC members for content
- Provide lots of research & reference material
- Weekly meetings to stay on track
- Gap identification
- Report challenges support
- Edit for content, flow, gaps, confusing points, completeness, attributions, (as well as spelling & grammar)

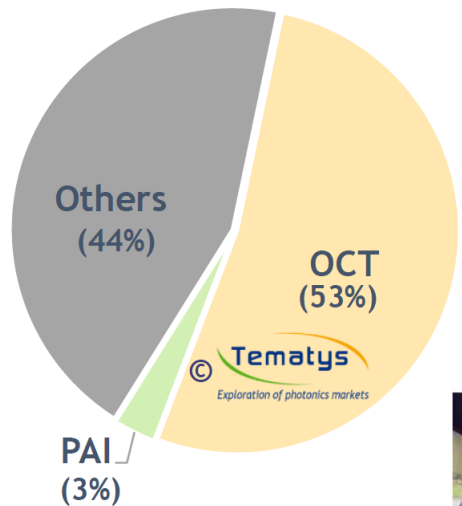


Source: Grammarly

# EPIC Curated Reports 2021

- Breast & Prostate Cancer Imaging
  - Tematys
- Automotive Interior Lighting
  - Ross Stanley, PhD
- Elevated Body Temperature Screening
  - Nikolaus Schmitt, PhD
- 5G X-Haul
  - Mark Lutkowitz
- 5G Requirements Driving Photonic Opportunities
  - Tracey Vanik

## GLOBAL OPTICAL IMAGING MARKET



Invisible A-pillar concept



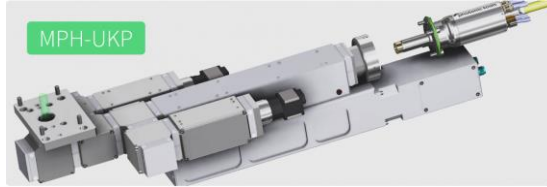


# **EPIC Curated Reports 2022...**

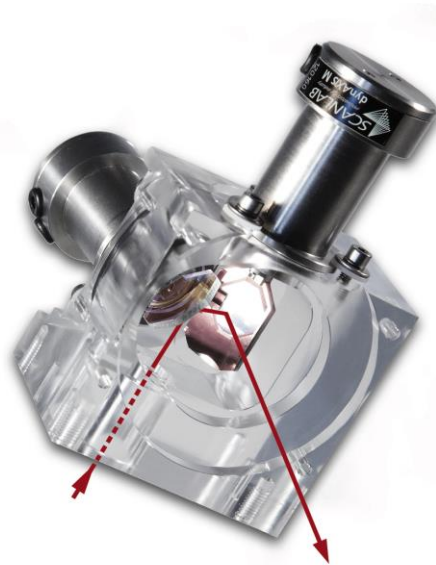
# Precision Micromachining...

## Laser Systems for Manufacturing – Focusing Devices

- Focusing Device
- Fix Lens
- Scanner System
- Multi Beam Optics

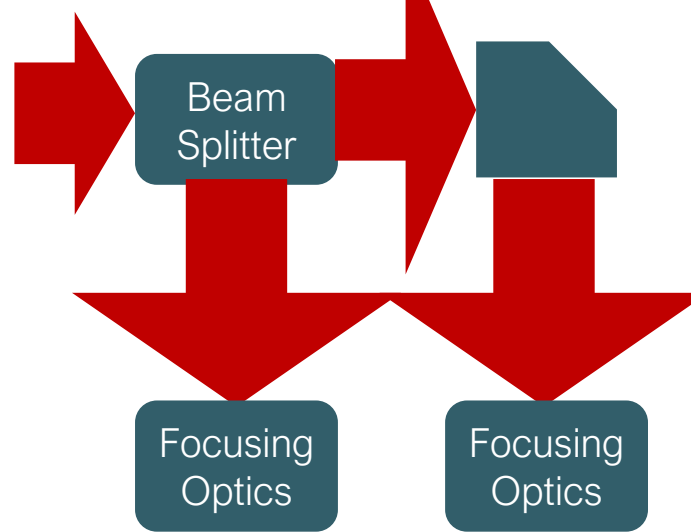


© photonic-tools.de

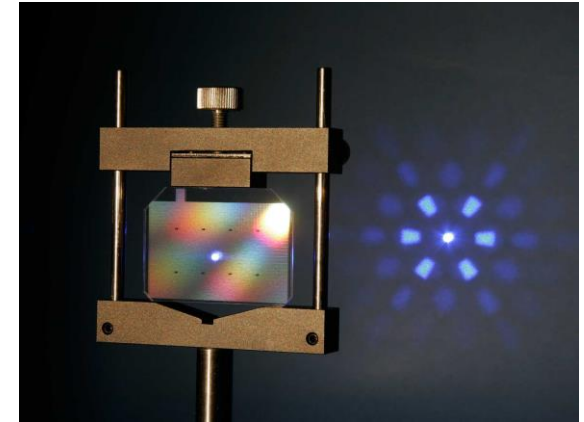


© scanlab.de

### Multispot via Beam Splitters



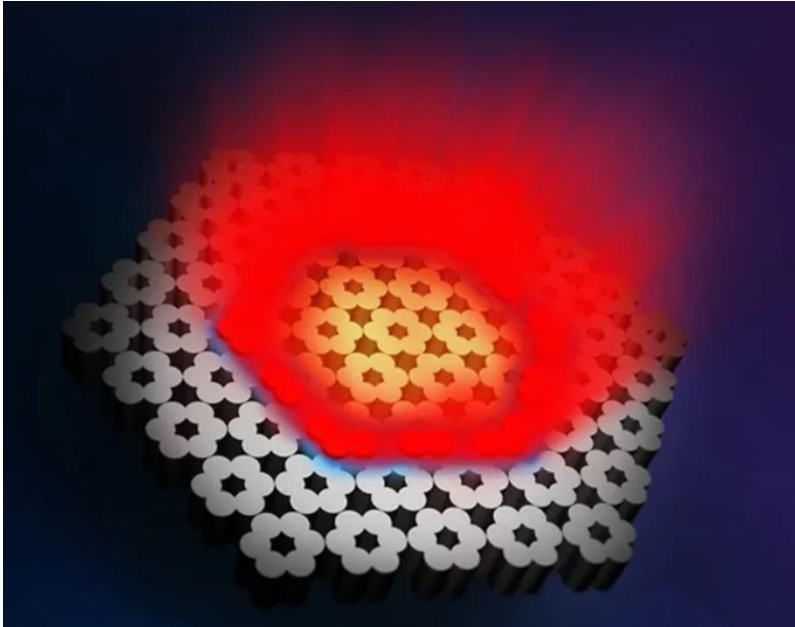
### Multispot via DOE or SLM



DOE: Diffractive Optical Elements  
SLM: Spatial Light Modulators  
(Dynamic SLM)

© jenoptik

# Non Telecom VCSELs... VCSEL Arrays



Source: *Laser Focus World* 8Nov2021

Reference: A. Dikopoltsev et al., *Science*, 373, 6562, 1514–1517 (Sep. 24, 2021)

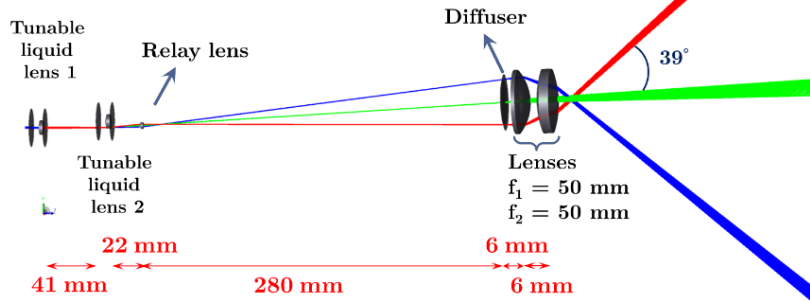
## Topological insulator vertical-cavity surface-emitting laser (VCSEL) array

- Results → large scale coherent array
  - *Increased output power*
- In principle “this [combined] laser can generally work for *all wavelengths* and thus *a range of materials*”

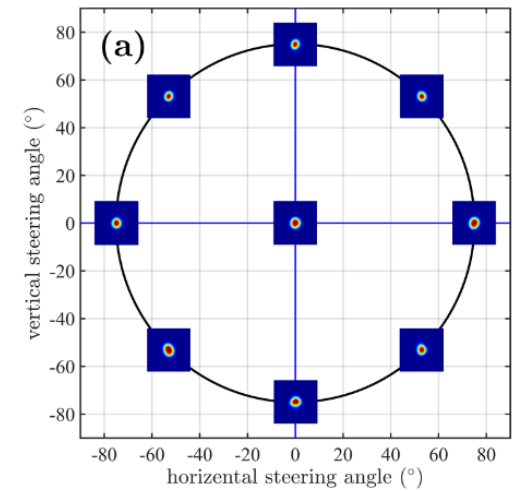
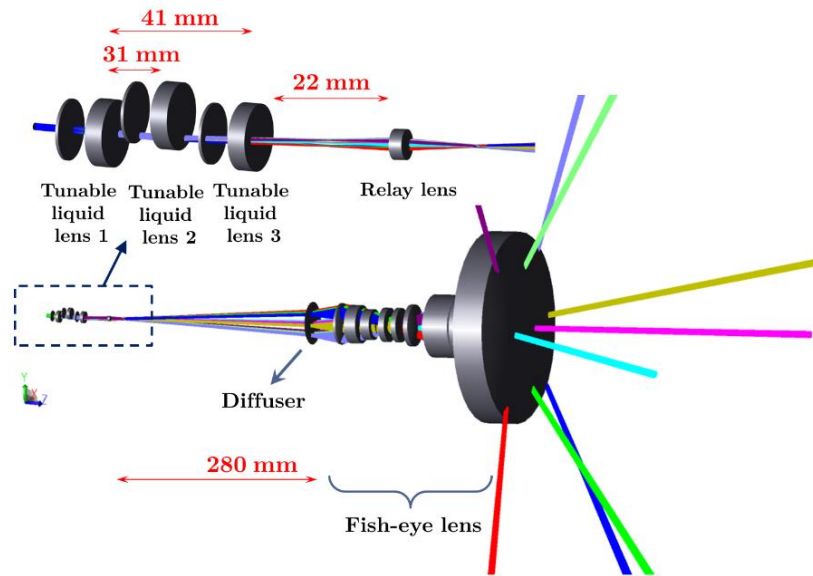
# Beam Steering...

## 1D & 2D Large FOV Scanning with Tunable Lenses

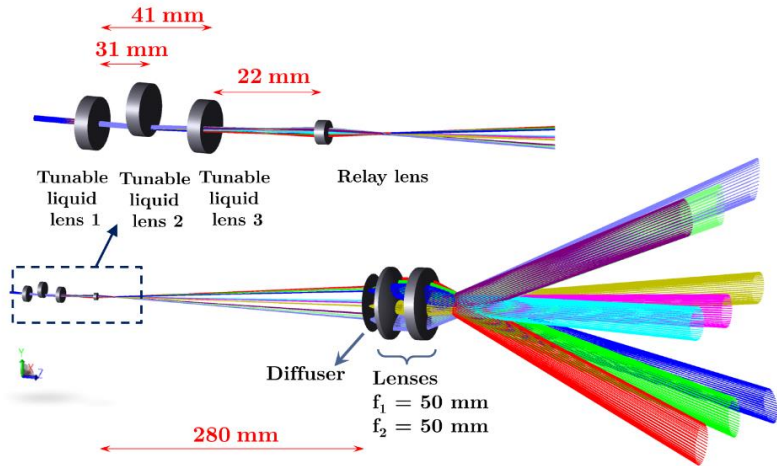
1D scanning with 2 tunable lenses (1 decentered)  
increased deflection angle using a relay lens and a diffuser



2D scanning with 3 tunable lenses (2 decentered) increased deflection angle using a relay lens and a fish eye diffuser



2D scanning with 3 tunable lenses (2 are decentered)



Mo Zohrabi et. al., "Wide angle non-mechanical beam steering using liquid lenses", Opt. Expr. Vol. 24 No. 21, 17. Oct. 2016, Opt. Expr. 23798

# EPIC Curated Reports 2022

- Precision Micromachining
- New VCSEL Developments & Applications (non telecom)
- Beam Steering & Applications
  - (including phased array techniques, MEMs, metalens steering, et al.)
- Maskless Lithography
- VCSEL 3D Imaging & Applications
- Modulation Approaches for High Speed Communication
- Testing of Photonic Devices (wafer, die, pkg)
- Freeform Optics & Applications
- BioSensing: non- & minimally invasive
- Quantum: Space Communications, Timing, & Synchronisation

# EPIC Curated Reports 2022 (backup)

- [Specialty Fibers]
- [Metalenses & Applications]
- [Photonics in eMobility Power including  
Li Ion Batteries & Hydrogen Fuel cells]  
{high Power Lasers}
- [Developments in Microscopy]

# EPIC Report Summary

- **Purchased Reports**
- **EPIC Curated Reports**
- **Coming attractions**

**Thank you!**

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THE LARGEST PHOTONICS INDUSTRY ASSOCIATION IN THE WORLD

EPIC