



Photronics21 - Work Group 2
*Second Workshop on setting photonics research and innovation
 priorities for Horizon 2020 work programme 2018-2020*
19 April 2016, Frankfurt

Draft Minutes

Participants:

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Welcome and short introduction

- Welcome by WG2-Chair Thomas Rettich and approval of the agenda
- Overview of the outcome of the recent workshop at the annual meeting in Brussels
- Objective of the current workshop: condensation of the topics suggested in the Brussels workshop to "a handful" of actions

Tour de Table

- Introduction of workshop participants (see list)

Update of Portfolio Analysis, Report on past calls and projects

- Presentation by Arnold Gillner, FhG-ILT and Paul Hilton, TWI
- Analysis of past projects, reviewed funding strategies,
- WG2 outcomes, execution of a SWOT analysis
- Presentation has been uploaded to P21 platform
- Discussion:
 - o Recommendation to follow up approaches like LASHARE and APPOLO
 - o Leverage and impact assessment needs to have quantified values (→KPI)

Discussion of potential photonics R+I topics for H2020 WP 2018-2020

- Three areas in H2020 to be addressed: Photonics, FoF, NMP
- Next step: consolidation of the output of the first workshop through three workgroups: CES, CC and AC (like in the first workshop)

Components, elements and systems (CES)

RIA

- Fast laser source, high power, ns/fs, more than kW, wavelengths from UV to mid-IR, pulse regime depending on the application
- Transport system, fibres, beam shaping
- Closed loop control for the overall laser delivery systems down to the work piece
- Laser beam from the source to the work piece
- Outcome: define the objective by physical properties of the laser and its delivery system but exclude process development, validate by sample application

IA

- Employ laser source from USP to CW – any kind
- High speed sensors for process control
- Beam shaping for controlled energy distribution
- Address closed loop control so that the application can be done
- Exists for welding, but not for other application areas such as USP

Selected topic:

Ultra-short pulse laser system with high average power for fast material processing (as research topic TRL<5 and as innovation topic with TRL >5)

Cross Cutting (CC)

From CAD to cloud based data to parts

- Self calibrating machine
 - o Automatic rigging
 - o High quality manufacture of zero defects parts

- Laser process parameters
 - o Software behind the laser processes
 - o Knowledge base for process parameters
 - o Pathfinder tells the way to employ the right equipment for the requested manufacturing task
 - o New business models, sale and purchase of process parameters

Digital Innovation Hubs (DIH)

- Broader base of research facilities
- Incubator for SMEs
- Access to venture capital
- Link to cloud based process data base

Laser Safety

- Feed data into database
- Measure radiation limits
- Could well fit into DIH project, alternatively CSA

Pilot Line

- Could be connected to DIH
- Self-learning approaches
- Cloud based data
- Sensor based autonomous machines

Selected topics:

1. CAD → Cloud → Part

2. Digital photonics innovation hubs

Application and Concepts (AC)

Additive manufacturing

- Might be linked to FoF
- With respect to the previous calls, might pick up the white spots
- Innovation hub on laser based additive manufacturing
(added in the post session)

Surface processing

- Separate from current call topics and previously suggested topic

Innovative solutions for manufacturing

- Scale up of manufacturing processes

IA: Laser based processing of multimaterial systems

- Dissimilar materials (plastics, copper, steel, carbon, ...)
- Joining and cutting of fibre reinforced materials
- High productivity, high volume production (light weight, multi-material systems, hybrid, multi process)
- Variable density materials, controlled porosity
- Powder materials in additive manufacturing
- Aerospace, Automotive, Medical, Energy

Selected topics:

1. Production of hybrid material components by laser material processing

2. Innovation hub in laser based additive manufacturing

3. Tailored laser beams

Remark:

recall topics that were put forward to the BOS (but did not get funding)

- Photon induced surface processing

- High power beam shaping

Next steps

→*Draft paper with the selected topics*

- Description of the topic
- Leverage of the suggested activities
- Societal challenges addressed by the topic

The draft paper shall be created by Arnold Gillner, Paul Hilton and Thomas Rettich as an editor group - first discussion within today's group.

- Circulation of the draft version within WG 2 (→June '16)
- Finalization until July '16
- Coordination with EC: Sept '16
- Presentation in BoS: Nov '16