EMPIR JRP 14IND13 PhotInd 9-month meeting

Work Package WP4: Measurement comparisons of the methods developed in WP1-WP3

WP4 Aims and Objectives

Main goals of WP4:

- Comparison of methods developed in technical work packages WP1-WP3 with each other and to existing methods.

- Comparison of OTDR calibrations, where interested parties from (for example) the European Photonics Industry Consortium (EPIC) will be invited to attend

Planned start: Month 24 – Month 30

Task 4.1.1

- Compare the method developed for dimensional characterisation of advanced optical fibers (task 1.1.).

- Methods:
  - Microscope measurements of the end face of the fibre and standard measurements of the diameter.
  - Numerical simulations performed with JCM software
  - VTT will compare the method developed in Task 1.1 to existing methods and devices at Oplatek and nLIGHT. Measurement parameters will include thickness, concentricity and non-circularity of fibre layers. Existing methods also include off-line instruments, such as Photon Kinetics PK2400 and PK2401
- Planned start: Month 30

VTT oplatek inspired by optics UNIVERSITY OF EASTERN FINLAND nLIGHT

Task 4.1.2

- Compare the method developed for optical fibre dispersion measurements (task 1.2.).

- Methods:
  - METAS will contribute to the comparison of methods to measure the optical fibre dispersion by calibrating a series of reference fibres using a phase shift technique.
  - Measurements will be performed in the wavelength ranges 1250 nm to 1360 nm and 1450 nm to 1650 nm.

- Planned start: Month 30

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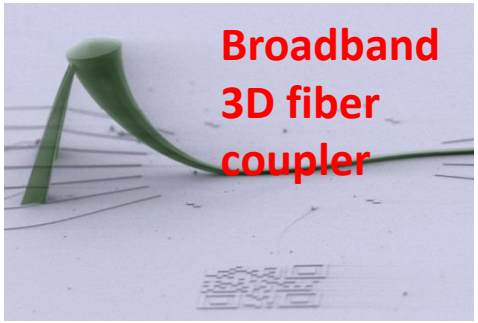
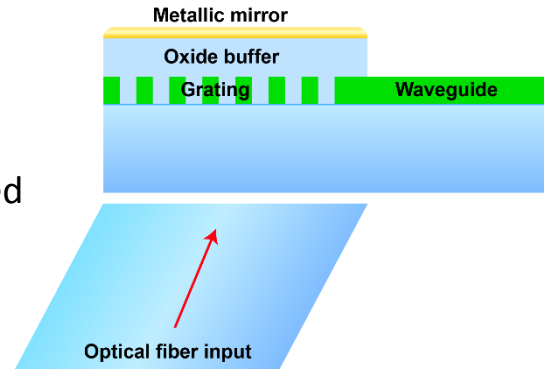
Task 4.1.3

- Compare different approaches for fibre-to-chip coupling (task 2.2.).

- Expected activities (WWE):
  - Compare coupling efficiency of mirror-enhanced grating couplers and 3D couplers
  - Evaluate coupling bandwidth and wavelength range
  - Check suitability for multi-fiber access
  - Correlate measurement results with numerical predictions provided by JCM
  - Evaluate reproducibility and alignment tolerances for fabrication
  - Compare experimental realizations in different material system





- Planned start: Month 30

Westfälische Wilhelms-Universität Münster

University of Eastern Finland

Task 4.1.4

- Validate developed Encircled Angular Flux (EAF) measurements (task 3.1.).
- Methods:
  - Direct illumination or a f/θ lens, or a reference goniometer.
- Planned start: Month 24

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Task 4.1.5

- Compare artefacts developed for Optical Time Domain Reflectometers (OTDR) (task 3.2.).
- Relevant calibration parameters:
  - Distance scale
  - Attenuation
- Planned start: Month 24

METAS Federal Office of Metrology

NPL National Physical Laboratory

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