



**COMBINING
TECHNOLOGIES.
CREATING
SOLUTIONS.**

**MID-INFRARED ARTHROSCOPY
SPECTROMETER SYSTEM**

www.miracleproject.eu



THE FUTURE OF ARTHROSCOPY

MIRACLE will bring together multiple technologies to make the first *mid-infrared attenuated total reflection* (MIR-ATR) probe to be used during *minimally invasive* arthroscopy.

This will enable an accurate assessment of articular cartilage during arthroscopy, impacting on the intra operative decision-making *promoting patient well-being*.



Hook Probe

Miniaturized MIR-ATR probe with innovative hook-like design facilitating technological transfer to the clinics



iBEAM

A unique on-chip combiner for effective coupling of QCLs and MIR-ATR probe



QCL

Clinically relevant Quantum Cascade Lasers (QCL) to assess articular cartilage biochemical composition

Mechanical construction and compatible electronics integrating all the photonics components



Main Unit



Norwegian University of Life Sciences



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

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