

FULLPHASE

Fully integrated real time multi-wavelength photo acoustics
for early disease detection

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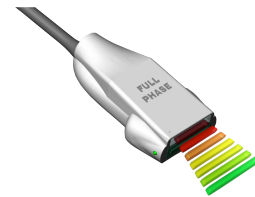
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Europe's ageing population faces a growth in chronic diseases and increase in healthcare cost. Therefore, sustainable delivery of healthcare at affordable cost is a major challenge for European healthcare systems. Important conditions are a shift towards prevention, early detection, fast and reliable medical diagnosis and optimal treatment monitoring. All of this should have a natural embedding in the secondary and also already in primary care.

Early detection is the most prominent condition towards disease control; it offers the opportunity of early therapy rather than medical health care and surgery in a later and more critical phase of the disease. In order to aid this chain of early disease detection and optimal treatment monitoring it is vital to have medical imaging devices that can provide high detailed internal structure in combination with functional information in the sense of physical or chemical processes in tissue, and their alteration through disease like Rheumatology, Oncology and Cardio Vascular Disease. Much effort has been and is being put, in developing structural and functional tissue monitoring with accepted medical imaging modalities such as: Magnetic resonance imaging (MRI), X-ray imaging, Computed tomography (CT), Nuclear imaging such as positron emission tomography (PET) and the gamma camera and ultrasound imaging (US).

Except for US imaging, none of the above technologies can be characterized as: suitable for point-of-care applications, low cost, low risk and non-complex in use.

Functional imaging, the extraction of any information regarding physical or chemical processes in tissue and their alteration through disease, is a key element for accurate and timely diagnosis and for monitoring therapeutic success.

In the European project FULLPHASE, a **portable multiwavelength photoacoustic medical system** to be applied for point-of-care early disease detection and optimal treatment monitoring will be developed. The objective is the transition of PA (photoacoustics) imaging from a lab-based technique to a low-cost portable multi wavelength combined PA and US (ultrasound) system. In order to reach that goal, the FULLPHASE partners integrate complementary and specific expertise in diode laser technology, laser beam shaping, ultrasound imaging technology, and system integration. After clinical validation, the FULLPHASE system will be applicable in oncology, rheumatology and for cardio vascular disease.



FULLPHASE concept: Multi wavelength diode laser with dedicated US probe creating a PA/US probe. The PA/US probe will be connected to a portable ultrasound system creating a PA/US imaging system for point-of-care early disease detection and treatment monitoring in rheumatology, oncology and cardiovascular disease.

The FULLPHASE consortium:

Coordinator:

- ESAOTE EUROPE B.V. – Maastricht, NL

Partners:

- BrightLoop – Paris, F
- OSRAM Opto Semiconductors GmbH – Regensburg, D
- QUANTEL – Paris, F
- Ruhr-Universität Bochum - Bochum, D
- SILIOS TECHNOLOGIES – Peynier, F
- Technische Universiteit Eindhoven – Eindhoven, NL
- tp21 GmbH – Saarbruecken, D
- Universität Bern – Bern, CH
- Universiteit Twente – Enschede, NL
- ZGT Hengelo - Hengelo, NL

More information on FULLPHASE via <http://www.fullphase-fp7.eu>

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