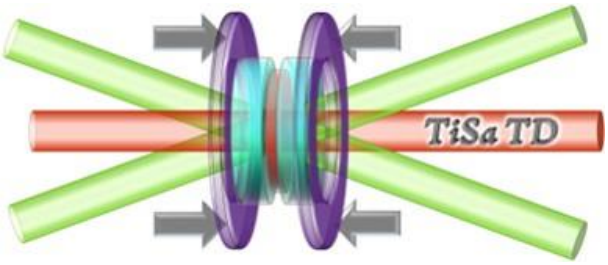

Project no. 619177
Project acronym: TiSa TD
Project title: Ultrafast High-Average Power Ti:Sapphire Thin-Disk Oscillator and Amplifiers

Collaborative Project (STREP)

FP7-ICT-2013-11
Information and Communication Technologies

D7.2 – Initial National and European press releases

Revision 1

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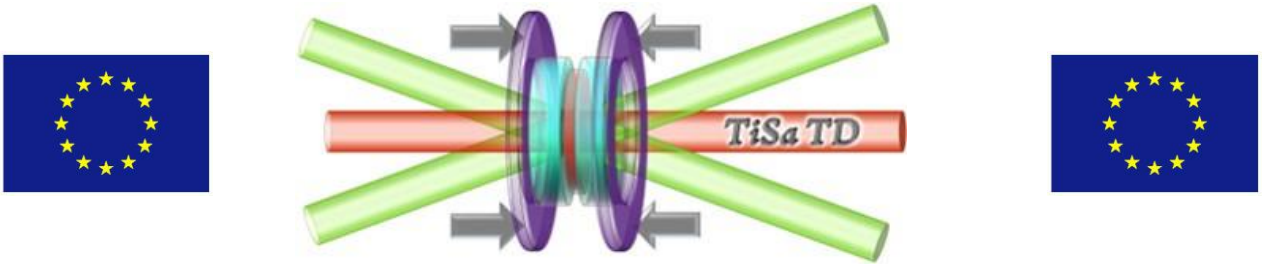
Dissemination Level		
PU	Public	**X**
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



D7.2: Initial National and European press releases

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1 TiSa TD Press Release

European Consortium has been granted €3.1m to develop ultrafast high-average power Ti:sapphire thin-disk oscillators and amplifiers

As part of the European Commission's Seventh Framework Programme for Research and Technological Development, the European consortium TiSa TD has been granted € 3.1 million for a project aimed at substantially improving the thermo-optical effects occurring in a Ti:Sapphire laser crystal pumped at high powers, which shall allow generating ultrafast laser pulses with a unique combination of high average power and extremely short duration. In turn, this will enable to simultaneously achieve optimum precision and unprecedented productivity in micro-machining of transparent materials such as glass and ceramics.

The three-year long project TiSa TD – which full title is "Ultrafast High-Average Power Ti:Sapphire Thin-Disk Oscillators and Amplifiers" – started on 1st December 2013 and is led by the laser development and laser optics department (headed by Dr. Marwan Abdou Ahmed) of the Institut für Strahlwerkzeuge (IFSW) at the Universität Stuttgart (USTUTT) in Germany. TiSa TD calls for the development of two high-average power ultrafast titanium:sapphire thin-disk laser systems, one amplifier system using chirped pulses to obtain high-energy pulses, and one high-power oscillator to achieve high repetition rates. Both will have a maximum average output power of at least 200 W at a pulse duration of well below 100 fs (a tenth of a billionth of a second).

Currently, most of the powerful industrial ultrafast laser sources operate in the picosecond range, which is sufficient for precision micromachining of metals. But to achieve optimum precision on transparent materials such as glass and ceramics widely used for example in smartphones and tablets, pulse durations of the order of 100 fs are required.

"Along with the very interesting scientific challenges, the development of new ultrashort-pulse disk lasers with a high output power is also of great scientific interest with a view to the increase in productivity with the laser-based material processing," said professor Thomas Graf, head of the IFSW.

Partners on the TiSa TD project, coordinated by Dr. Andreas Voss at the Universität Stuttgart (USTUTT), include the institute FEMTO-ST, which is affiliated with the Centre National de la Recherche Scientifique (CNRS) and the company Thales Optronique (TOSA), both located in France, as well as the UK-based companies Element Six (E6), Oxford Lasers (OXFORD) and M-Squared Lasers (M2).

USTUTT (IFSW; www.ifsw.uni-stuttgart.de) as well as being the project coordinator, will be in charge of the design, realization and characterization of the high-power modelocked Ti:sapphire thin-disk oscillator.

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CNRS (FEMTO-ST; www.femto-st.fr) will be responsible for designing and testing a laser processing setup with non-diffracting beams which will be employed to investigate ultra-high aspect ratio drilling of transparent materials such as glass, sapphire, and diamond.

TOSA (www.thalesgroup.com/en/worldwide/security/lasers) will be in charge of the design, realization and characterization of the high-power Ti:sapphire thin-disk chirped-pulse amplification system.

E6 (www.e6.com) will provide the low-loss single crystal CVD diamond windows required to efficiently extract the heat from the laser crystal.

OXFORD (www.oxfordlasers.com) will oversee the system integration as well as investigate the materials processing using the high-power thin-disk oscillator, including high-speed precision cutting of thin glass sheets widely used for mobile equipment like tablets.

M2 (www.m2lasers.com) will be in charge of the development of the pre-prototype oscillator system, the design and implementation of custom electronics, the mechanics and the software algorithms.

For further information, please visit TiSa TD website (www.tisa-td.eu), where you will have access to the latest news including the experimental results obtained within the project.

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