



APPLICATION ORIENTED RESEARCH IN THE AREA OF HIGH-BRILLIANCE FIBRE LASERS

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LIFT organises the First European Workshop on Photodarkening in Gain Fibres

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The LIFT consortium is organising the **European Workshop on Photodarkening in Optical Fibres** during the Symposium on Fibre and Disc Lasers (**FiSC**) to be held 5-6 October 2010 in Dresden Germany at the MARITIM Internationales Congress Center.

The Workshop Chairs are Daniel Milanese of the Materials Science and Chemical Engineering Department of the Politecnico di Torino, and Stefano Taccheo of the Department of Physics at Swansea University.

Photodarkening (PD) is a major issue in high power fibre lasers since it has an impact on laser performance and reliability. In order to solve this problem there are important topics that have to be thoroughly investigated in order to get to consensus on the definition of PD and of the mechanisms of such phenomena.

The workshop will include several experts whose specialities lie outside the LIFT project. Each expert will cover a key topic in order to help the consortium and indeed the whole of European industry to advance the understanding of photodarkening and to provide routes for the improvement of existing optical fibres and components.

International experts have been invited to frame the discussions and debates among the workshop participants:

•**Prof. Kirchof or Dr. Silvia Jetschke** (IPHT Jena, Germany): *"Photodarkening characterisation, bleaching and effect of glass composition"*

•**Prof. Kazuya Saito** (Toyota Technology Center, Japan) *"Mechanisms of Photodarkening and methods to investigate the structural changes"*.

Each presentation will connect the expert's own work with issues of importance within the LIFT Project. Furthermore, experts will be asked to put their work in a large framework with reference to the state of the art for the topic discussed.

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Presentations are 45 minutes: 30 minutes devoted to the presentation of the presenter's recent activity, 10 minutes to answer specific questions (see below) and 5 minutes to Q&A. Each expert will specifically address the following questions:

- What is a definition of PD that can bring consensus?
- What is the dependence of PD loss on pump intensity and Yb concentration/inversion?
- How does bleaching occur and why?
- Which glass networks could minimize PD?
- What is your opinion on the mechanism underlying the PD of an optical fibre?
 - *Charge transfer bands*: please detail your idea of this mechanism. What is the role of Yb²⁺?
 - *Oxygen Deficient Centres (ODC)*: are they somehow related to the PD?

During the session all workshop participants are encouraged to contribute. The same questions will be used as the basis for a round table discussion. Participants should bring their own contributions (max 2 slides, 2 minutes to comment).

The workshop will run for a full day, starting at 11h20. There will be a plenary talk at 10:20 by Prof. Kazuya Saito together with the announcement of the PD workshop starting at 11:20.

First part (11:20 – 12:40):

11:20 - Prof. Kirchoff or Dr. Silvia Jetschke (IPHT Jena, Germany): "*Photodarkening characterisation, bleaching and effect of glass composition*"

12:00 - TBD

Presentations by each guest: 2 guests, 35 minutes each (including answer to questions) + 5 minutes discussion

Lunch Break (12:40 – 14:00)

Second part (14:00 – 16:00):

Rump session/round table discussion on the questions posed in the morning. Presentations of contributions from participants (10 minutes) + open discussion.

14:00 - Prof. Kazuya Saito – Answers to questions

14:20 - 10 min presentations by Lift partners (NKT, ORC, etc.)

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Preliminary Program for International Laser Symposium FiSC 2010 available

**International LASER
Symposium** **Fi^{ber}
DiSC**

Brilliant lasers with outstanding beam quality are a crucial parameter for process efficiency. In Dresden, a manifold center of science and research, the sixth of these workshops will present innovations in the field of fiber lasers but also current developments on disc lasers.

Renowned experts from research and industry will demonstrate to an international audience their latest achievements on laser and system technology as well as practical applications of brilliant laser sources.

In parallel with the conference programme, you will be able to discuss aspects of photodarkening in optical fibers.

The conference program is now available, http://www.iws.fraunhofer.de/workshop/preliminary_program_FiSC_2010.pdf.

For further information, please visit http://www.iws.fraunhofer.de/workshop/e_workshop.html.

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