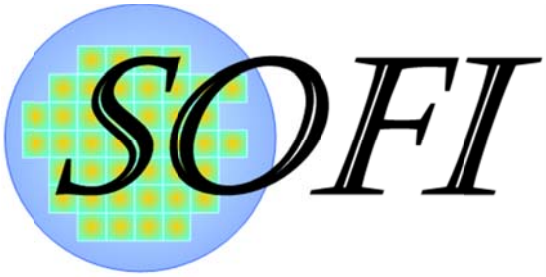

Silicon-Organic hybrid Fabrication platform for Integrated circuits

First report on SOFI dissemination and promotion activities

Deliverable no.:	D6.3
Due date:	12/31/2010
Actual Submission date:	12/31/2010
Authors:	GO, UKA, SELEX, IMEC, RB, AIT
Work package(s):	WP6
Distribution level:	PU[1]
Nature:	document, available online in the public area of the SOFI webpage

List of Partners concerned

Partner number	Partner name	Partner short name	Country	Date enter project	Date exit project
1 (coordinator)	Karlsruhe Institute of Technology (formerly University of Karlsruhe)	UKA	Germany	M1	M36
2	SELEX - Sistemi Integrati	SELEX	Italy	M1	M36
3	Interuniversity Microelectronics Centre - IMEC	IMEC	Belgium	M1	M36
4	Rainbow Photonics AG	RB	Switzerland	M1	M36
5	GigOptix-Helix AG	GO	Switzerland	M1	M36
6	Research and Education Laboratory in Information Technologies	AIT	Greece	M1	M36
7	The University of Sydney, Centre for Ultrahigh bandwidth Devices for Optical Systems	CUDOS	Australia	M1	M36

[1] **PU** = Public
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)

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Change Records

Version	Date	**Changes**	Author
0.1 (draft)	2010-12-13	Start	gcangini@gigoptix.com
1.0	2010-12-29	Preparation for submission	korn@kit.edu

Contents

1. Executive Summary

This document is the public version of first report on the actions taken by the SOFI consortium in terms of dissemination of the project results.

In the first year of the SOFI project a significant amount of knowledge was generated in the specific topics related to the project.

While the actual exploitation activities and plans are detailed in Deliverable 6.2, it is worth mentioning the good results achieved already in this first year suggest great potential for the further developments planned within SOFI and more so in view of the exploitation after the conclusion of the project.

To disseminate the project results and promote its visibility several actions were taken by the different partners:

- The project web site was created containing all public information related to the project, including a concise summary of the project mission and vision.
- Press releases have been issued by the Consortium and by partners.
- Significant presence at the most relevant optical conferences and symposiums in 2010.

All partners have been very active in promoting the SOFI project in renowned scientific journals, magazines, conferences and seminars with great impact.

2. Dissemination of Knowledge

All partners of the SOFI consortium are committed to mobilize their contacts in the international research society and industry to promote the project results.

The participation in conferences, workshops and EU events not only falls in the project scope but it is one of the main project objectives.

Scientific contributions have and will continue to be submitted, throughout the project lifetime, for publication to journals/conferences, provided that they will enhance project visibility and release useful conclusions to the telecom community and other areas.

The dissemination plan includes the creation and maintenance of a professional project website containing all public information and facilitating contacts and exchanges with other research and industrial initiatives on the relevant topics. The consortium's website was created and is maintained by UKA with inputs from all partners.

In Sections 3.1 to 3.6 the activities per partner are listed.

3.1 RB Dissemination activities

Conferences and Symposiums

RB presented the results of the activities within SOFI at the following international conferences or universities:

1. Talk at the OSA Advanced Photonics Congress in Karlsruhe, Germany, 21-24.06.2010, Organic electro-optic crystalline materials for highly integrated photonic circuits, M. Jazbinsek

In this talk we presented our results on hybrid integration of organic electro-optic crystalline materials with inorganic glass structures, as well as preliminary results on hybrid integration of these materials with silicon waveguides, which is the main activity of RB within the SOFI project.

2. Invited seminar, 20.07.2010, KAIST, Daejeon, S. Korea, Organic photonic single- crystalline materials and devices, M. Jazbinsek

In this seminar for master students of physical chemistry we presented the fundamentals of organic crystalline materials, including the molecular design and engineering, synthesis, crystal engineering, solution, melt and vapor processing, as well as most promising current applications. These topics are directly related to the development of organic electro-optic materials and new crystal processing techniques at RB for the SOFI project.

3. Invited seminar, 06.08.2010, CICESE, Ensenada, Mexico, Organic crystalline materials for electro-optics and terahertz-wave generation, M. Jazbinsek

In this seminar for undergraduate and graduate students of physics and specialists in photonics, we presented the fundamentals of nonlinear optical and electro-optic effects, fundamentals of organic nonlinear optical materials and their advantages to inorganic materials for THz wave applications and integrated electro-optics, with particular emphasis on the silicon-organic hybrid integration, which is the topic of the SOFI project.

4. Invited talk, 06.07.10, Photonic and Electronic Materials, San Sebastian, Spain, Organic electro-optical micro-resonators for highly integrated optics, P. Günter

In this talk we presented the most important and most advanced large-scale-integrated electro-optic element based on organic crystals we developed until now: organic crystalline electro-optic microring resonator. This element is based on hybrid integration of organic materials with SiO_2, and is related to our SOFI activities due to the requirement of organic electro-optic single crystals grown within sub-100-nm inorganic structures.

5. Invited talk at SPIE Optics & Photonics, San Diego, USA, 01-05.08.2010, Organic electro-optic single crystalline films for integrated optics, M. Jazbinsek, , with proceeding paper: M. Jazbinsek, H. Figi, C. Hunziker, B. Ruiz, S.J. Kwon, O.P. Kwon, Z. Yang, P. Günter, "Organic electro-optic single crystalline films for integrated optics" Proc. of SPIE 7774, 77740Q1-10 (2010).

In this talk and the accompanying proceeding paper we presented an overview of the most promising organic crystalline materials and different organic-crystal processing techniques for integrated optics investigated by RB for the SOFI project.

3.2 AIT Dissemination activities

Conferences and Symposiums

AIT presented or has planned to present the results of the activities within SOFI in international conferences or universities as follows:

- Prof. Ioannis Tomkos had co-organised symposium at the OFC'11 on "Meeting the Computercom Challenge: Components and Architectures for Computational Systems and Data Centers using Silicon Photonic systems".

- AIT has submitted a paper entitled "A Novel cost-effective comb line generation source for Optical OFDM system' to OFC'11

- An internal presentation at the relevant AIT researchers about the SOFI technology platform

- A presentation to interested AIT graduate students about the SOFI technology platform with the AIT activities

3.3 SELEX Dissemination activities

Conferences and Symposiums

In order to disseminate the activities related to the SOFI project and to show the results obtained on the packaging and RF design, SELEX-SI submitted a paper to the conference "FOTONICA 2011".

Journals

Apart the contribution to the white paper on the European Silicon Photonics cluster on the applications to security, articles have been submitted to the magazine specialized on defense technology "TECNOLOGIA&DIFESA" and to the internal company journal POLARIS.

3.4 GO Dissemination activities

Conferences and Symposiums

GigOptix was present at the following optical conferences and symposiums with its own corporate booth:

- OFC2010, S. Diego, US, March 2010
- ECOC 2010, Torino, Italy, September 2010

A strong highlight has been given to GigOptix technologies that relate to silicon photonics, namely GigOptix's EO material and chipset for optical interconnect and to the participation to the SOFI project during the meetings at both shows.

Press releases

To increase the public awareness of the SOFI project, GigOptix is engaged in trying to draw popular media attention to SOFI. Find below the list of press releases GigOptix has been involved in writing:

- SOFI project start press release
  'Ultra-Fast Ultra-Low Power Modulators'
  – Fundamental Building Blocks of the Internet of Tomorrow –
  Are Envisioned by the Recently Founded European Research Consortium SOFI
  Sofi Press Release February 25, 2010

- "GigOptix Enters SOFI Project", Zurich, March 11, 2010

Conferences

GigOptix contributed to the preparation to several papers presented at conferences by UKA. Please refer to Section 3.6 for the full listing.

3.5 IMEC Dissemination activities

Conferences

Conference presentations which discussed the work in SOFI:

- W. Bogaerts, S. Selvaraja, P. Dumon, P. Absil, D. Van Thourhout, R. Baets, Photonic Integrated Circuits in Silicon-on-Insulator, IEEE SOI Conference (invited), United States, p.9.02 (2010).
- S. Selvaraja, W. Bogaerts, P. Absil, D. Van Thourhout, R. Baets, Record Low-Loss Hybrid Rib/Wire Waveguides for Silicon Photonic Circuits ,Group IV Photonics 2010 (PD), China, (2010)
- W. Bogaerts, R. Baets, G. Roelkens, D. Van Thourhout, p. Absil, S. Selvaraja, H. Yu, A. Masood, A silicon photonics platform with heterogeneous III-V integration,Workshop on the Future of Silicon Photonics (invited), China, p.11 (2010)

3.6 UKA Dissemination activities

UKA, as the coordinator of the project has been very active in the dissemination activities of the project, which are listed below. UKA is also keeping the SOFI webpage up-to-date.

Journals

'Nonlinear silicon photonics'
Leuthold, J., Koos, C., Freude, W.;
Nat Photon 4, 535-544 July 2010 **[invited]**
doi:10.1038/nphoton.2010.185
Mentions Silicon-Organic-Hybrid technology and mentions results based on SOFI funded research.

Conferences

'High-speed signal processing with silicon-organic hybrid devices'
Freude W., Alloatti L., Vallaitis T., Korn D., Hillerkuss D., Bonk R., Palmer R., Li J., Schellinger T., Fournier M., Fedeli J., BogaertsW., Dumon P., Baets R., Barklund A., Dinu R., Wieland J., Scimeca M. L.;
European Optical Society Annual Meeting (EOS'10), Parc Floral De Paris, France, October 2010 **[invited]**
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Silicon High-Speed Electro-Optic Modulator'
Alloatti L., Korn D., Hillerkuss D., Vallaitis T., Li J., Bonk R., Palmer R., Schellinger T., Barklund A., Dinu R., Wieland J.,Fournier M., Fedeli J., Bogaerts W., Dumon P., Baets R., Koos C., Freude W., LeutholdJ.;
Group IV Photonics 2010, China, paper ThC2 Sept. 2010
Presents only latest results of SOFI.

'40 Gbit/s Silicon-Organic Hybrid (SOH) Phase Modulator'
Alloatti L., Korn D., Hillerkuss D., Vallaitis T., Li J., Bonk R., Palmer R., Schellinger T., Barklund A., Dinu R., Wieland J., Fournier M., Fedeli J., Dumon P., Baets R., Koos C., Freude W., Leuthold J.;
ECOC 2010, Torino, Italy, Paper Tu.5.C.4, September 2010
Presents only latest results of SOFI.

'All-optical signal processing with silicon-organic hybrid slot waveguides'·
Leuthold J., Koos C., Freude W., Vallaitis T., Alloatti L., Korn D., Dumon P., Bogaerts W., Baets R., Biaggio I., Diederich F.;
OSA Integrated Photonics Research, Silicon and Nano Photonics (IPR), Monterey (CA), USA, Paper IWC1, July 25–28, 2010 **[invited]**
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'100 Gbit/s electro-optic modulator and 56 Gbit/s wavelength converter for DQPSK data in silicon-organic hybrid (SOH) technology'
Freude W., Leuthold J., Alloatti L., Vallaitis T., Korn D., Palmer R., Koos C., Brosi J.-M., Dumon P., Baets R., Scimeca M. L., Biaggio I., Breiten B., Diederich F., Barklund A., Dinu R., Wieland J.;
Proc. IEEE Photonics Society (formerly: Lasers and Electro-Optics Society) Summer Topicals 2010 "Novel Waveguiding, Structures and Phenomena", Playa del Carmen, Riviera Maya, Mexico, Paper WB2.1, July 19–21, 2010 **[invited]**
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Ultrafast silicon-organic hybrid (SOH) photonics'
Freude W., Vallaitis T., Koos C., Brosi J.-M., Alloatti L., Dumon P., Baets R., Scimeca M. L., Biaggio I., Breiten B., Diederich F., Leuthold J.;
Proc. Conf. on Lasers and Electro-Optics (CLEO/IQEC'10), San Jose (CA), Paper CThR1, May 2010.**[invited]**
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

Lectures

'Silicon Nanophotonics and Silicon-Organic Hybrid (SOH) Integration'
Koos C. et al.;
Seminar of the Fraunhofer Institute for Applied Solid State Physics (IAF), Freiburg, Germany, July 10, 2010
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Silicon Nanophotonics: Device Principles and Applications'
Koos C. et al.;
Seminar of the Research Training Group 'Analysis, Simulation and Design of Nanotechnological Processes', Karlsruhe Institute of Technology, Germany, June 7, 2010
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Silicon Nanophotonics: An Emerging Toolbox for Optical Communications'
Koos, C. et al.;
Seminar of the Institute for Applied Physics, Karlsruhe Institute of Technology, Germany, June 4, 2010
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Silicon Nanophotonics and Silicon-Organic Hybrid Integration (SOH)'
Koos C. et al.;
Fachbereich "Mikrosystemtechnik und Nanotechnologie" der VDE-Gesellschaft Mikroelektronik, Mikrosystem- und Feinwerktechnik, Karlsruhe, Germany, June 1, 2010
Promotes Silicon-Organic-Hybrid technology and results based on SOFI funded research.

'Optical waveguides and Fibers '
Koos C., Alloatti L.;
Regular lecture on optical waveguides and fibers, explaining the advantages of Silicon and introducing the Silicon-Organic-Hybrid technology.
Karlsruhe Institute of Technology, Germany, winter semester 2010/2011
Partly promotes Silicon-Organic-Hybrid technology.

Press releases

To increase the public awareness of the start of SOFI and the influence of this European funded research on everyday life, UKA actively engages in trying to draw popular media attention to SOFI. Find below the list of press releases UKA worked on:

- SOFI project start press release
  'Ultra-Fast Ultra-Low Power Modulators'
  – Fundamental Building Blocks of the Internet of Tomorrow –
  Are Envisioned by the Recently Founded European Research Consortium SOFI
  Sofi Press Release February 25, 2010

- Press release specifically on UKA activities in SOFI (note that UKA is commonly referred to as KIT now)
  http://www.kit.edu/pi_2010_815.php (German)
  http://www.kit.edu/english/pi_2010_815.php (English)

  'Optical Chips Reduce Internet Energy Consumption'
  SOFI EU Project Aims at Extremely Fast and Energy-efficient Modulators for Telecommunication
  KIT-Service Press Release 024/2010

- Contributed to the press release of the silicon photonics cluster.
  www.siliconphotonics.eu.

Media coverage

To illustrate the impact of UKA dissemination activities for the SOFI project, some media reports have been collected:

'Optische Chips reduzieren Internet-Energieverbrauch'
TechPortal, Optische Technologien, March 2010

'Optische 100-GBit/s-Übertragungstechnik in Silizium'
heise online, March 12, 2010
at www.heise.de (most visited IT news ticker in Germany)

'Umsteigebahnhof auf einem Siliziumchip : Am Institut für Photonik arbeitet man an einem optischen Chip'
Interview of Prof. Dr. Jürg Leuthold - Radio Regenbogen, April 06, 2010
Most listened radio station (1.3 million listeners, private broadcasting company) in the federal state of Baden-Württemberg, Germany

SWR (public broadcasting company for the southwest of Germany, reaches an estimated 14.7 million residents) came to UKA with a camera team in response to the SOFI press release. Due to the recent project start no TV report could be generated, but UKA directed the camera team to another FP7 project instead.

3.6 CUDOS Dissemination activities

CUDOS will provide information about dissemination activities at a later stage of the project.

3. Consortium future actions

All partners will explore the possibility to organize a workshop at the end of the project. As a best option, such workshop would be organized as an event within a major conference and might include a live demonstration showing components developed within SOFI in operation.

The SOFI consortium will keep strong interaction with national and international initiatives through the activities independently carried on by the members of the consortium as one of the preferred ways to maximize synergies between the activities within the SOFI consortium and the scientific community as a whole.

A plan for using and disseminating knowledge will be maintained throughout the lifetime of the project.

The Final Plan for using and disseminating knowledge will describe the actual achievements for each participant in the consortium and their plans for the promotion of the project results - for the consortium as a whole, or for individual participants or groups of participants.

The Final Plan will also describe the dissemination strategies, the target groups and the strategic impact of the project in terms of improvement of competitiveness or creation of market opportunities for the participants.