

Sitoga

SILICON CMOS COMPATIBLE TRANSITION METAL OXIDE TECHNOLOGY FOR BOOSTING HIGHLY INTEGRATED PHOTONIC DEVICES WITH DISRUPTIVE PERFORMANCE

SPECIFIC TARGETED RESEARCH PROJECTS

Deliverable D7.5 Final report on dissemination activities

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ABSTRACT

This document summarizes the dissemination activities carried out during the project. In term of scientific publications, we have contributed with 52 publications (2 submitted) in international journals, conferences and workshops with 14 as of them invited talks.

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1. SITOGA Website

The SITOGA website (<http://www.sitoga.eu/>) has been running from the first months of the project and has been continuously updated during all the project with the public deliverables, the news and events, and the publications done to disseminate the project results. The private area has been used by the Consortium as a document repository in order to store the final versions of the deliverables and reports and the legal documents related to the project.

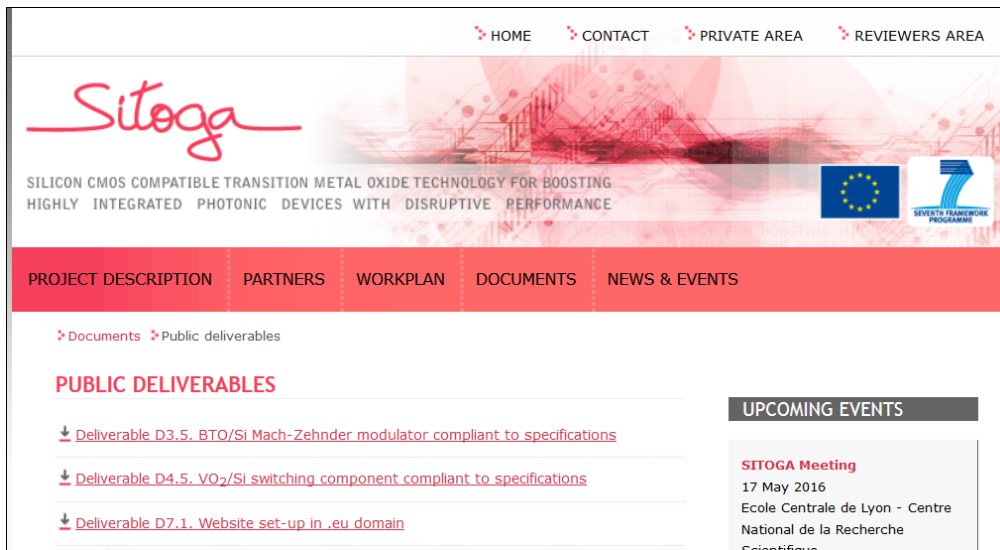


Figure 1. Capture of the public deliverables page of www.sitoga.eu.

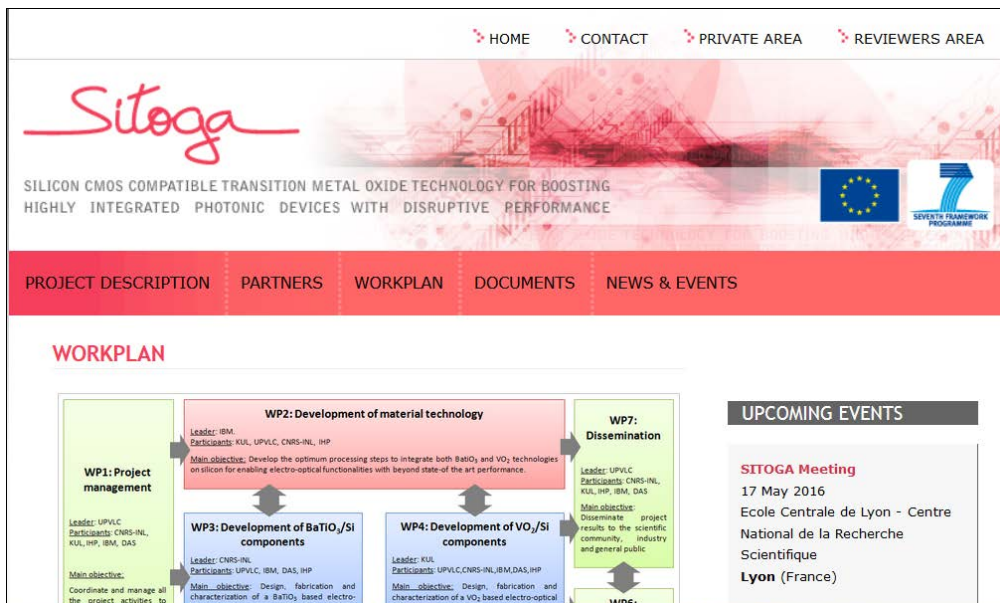


Figure 2. Capture of the workplan page of www.sitoga.eu.

The SITOGA website had more than 2500 visits during these months, distributed as shown in the charts below.

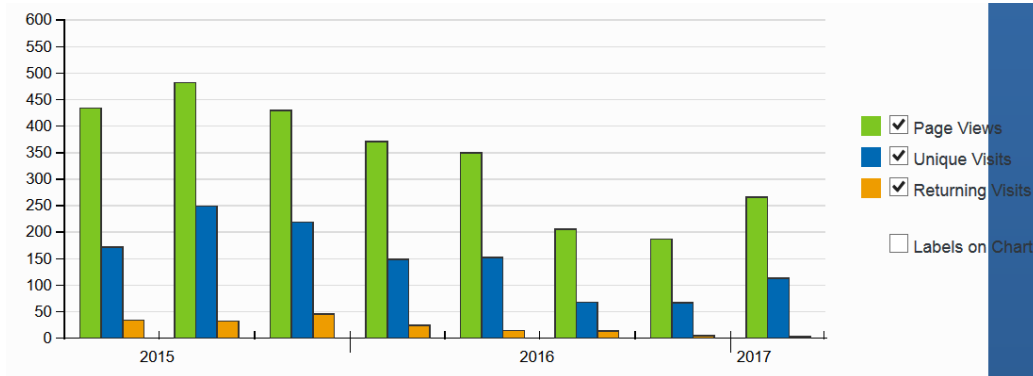


Figure 3. Visits to the website from M019 to M40.

Country				
115 Hits	23.00%	Germany		
73 Hits	14.60%	Belgium		
68 Hits	13.60%	United States		
52 Hits	10.40%	Spain		
40 Hits	8.00%	France		
24 Hits	4.80%	Italy		
20 Hits	4.00%	Canada		
16 Hits	3.20%	United Kingdom		
14 Hits	2.80%	Greece		
13 Hits	2.60%	Slovenia		
13 Hits	2.60%	Switzerland		
12 Hits	2.40%	China		
8 Hits	1.60%	Cyprus		
7 Hits	1.40%	Russian Federation		
5 Hits	1.00%	Turkey		
3 Hits	0.60%	Netherlands		
3 Hits	0.60%	Morocco		
2 Hits	0.40%	Ireland		
2 Hits	0.40%	Ethiopia		
2 Hits	0.40%	Denmark		
1 Hit	0.20%	South Africa		
1 Hit	0.20%	Vietnam		
1 Hit	0.20%	Taiwan		
1 Hit	0.20%	Philippines		
1 Hit	0.20%	Nigeria		
1 Hit	0.20%	Czech Republic		

Figure 4. Visits to the SITOGA website from M19 to M40 per country

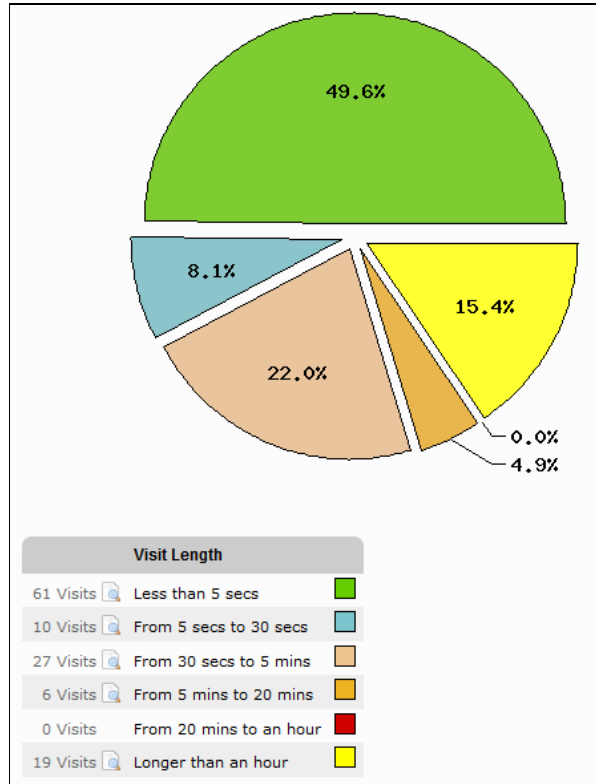



Figure 5. Length of the visits to the SITOGA website

2. Workshops and publications

We presented the project and its outcome during the post-ECOC workshop “Network Systems and Devices for IoT Era” that was held on September 2016. The post-ECOC-Workshop has been established several years ago, and is organized by a Japanese technology development program together with institutions from the host-country of ECOC. The purpose of the workshop is to stimulate interaction between industry and research in areas that typically show little overlap but where a more in-depth discussion of the needs of industry might foster new technological developments that would be beneficial for established or anticipated exploitation routes.

The workshop is typically held in close conjunction with ECOC, and is setup at a location which is in easy reach for ECOC participants. This year, the event took place in Karlsruhe Institute of Technology, and attracted between 50 and 100 attendees. The workshop had a strong representation of industries with speakers from NTT, ADVA, AIST, KDDI and Sicoya. The program is shown in Figure 6. The work from SITOGA was a prominent part of the invited talk by Dr. Fompeyrine, entitled "BTO integration on SiGe platform".



Date:
September 23, 2016

Venue:
Karlsruhe Institute of Technology (KIT), International Department (ID), Hector Auditorium ([Bldg. 02.95](#)), Schlossplatz 19, 76131 Karlsruhe, Germany

Topic:
Network Systems and Devices for IoT Era

Organizers	Program	Registration	Contact	Directions
Program				
9:45	Opening:		Masahiko Mori, AIST	
	<ul style="list-style-type: none"> Naoto Kobayashi, Waseda University <i>History of Post ECOC WS</i> 			
10:00	Session 1: Network systems		Jürg Leuthold, ETH	
	<ul style="list-style-type: none"> Masamichi Fujiwara, NTT <i>Burst-Mode Optical Amplifier Technologies and Their Applications, Ranging from Long-Reach to Digital Coherent PON Systems</i> Helmut Griebner, ADVA <i>Trends for high-speed data center interconnections</i> Oded Raz, TU/e <i>The next dimension in optical interconnects, towards the ultimate packaging solutions</i> Takayuki Kurosu, AIST <i>What is the true value of dynamic optical path switching?</i> 			
12:00	Lunch & Lab tour			
13:45	Session 2: Photonic Devices		Koji Yamada, AIST	
	<ul style="list-style-type: none"> Jean Fompeyrine, IBM <i>BTO integration on SiGe platform</i> Christian Koos, KIT <i>Photonic multi-chip integration using 3D laser lithography</i> Gunther Roelkens, Ghent Univ. <i>III-V-on-silicon photonic integrated circuits for optical communication applications</i> Stefan Meister, Sicoya <i>High-speed transceivers for data-centers based on photonic-electronic integration</i> 			
15:45	Break (15 min.)			
16:00	Session 3: Transmission Technology		Christian Koos, KIT	
	<ul style="list-style-type: none"> Sebastian Randel, KIT <i>Algorithms for High-Speed Optical Transceivers</i> Andrew Ellis, Aston University <i>Recent advances in nonlinearity compensation</i> Takehiro Tsuritani, KDDI <i>Ultrahigh capacity SDM/WDM transmission over multicore and multimode fibers</i> Jürg Leuthold, ETH Zurich <i>Constellation Mapping - a Technique to Improve the Spectral Efficiency</i> 			
18:00	Closing:		Christian Koos, KIT	

Figure 6. Program of the industrial workshop “Network Systems and Devices for IoT Era”.

We have organized a session on “New materials for photonics” during the 5th edition of the Spanish Nanophotonics Conference (www.phantomsnet.net/cen2016/) that took place in Valencia in June 2016. Figure 4 shows a description of the talks of the sessions.

New Materials for Photonics			
Chair: Pablo Sanchis (NTC-UPV, Spain)			
15:00-15:40	KEYNOTE	<i>New Materials for Multifunctional Photonic ICs</i>	Dries Van Thourhout , Ghent University - IMEC, Belgium Abstr.
15:40-16:10	INVITED	<i>High-index contrast waveguides in potassium double tungstates: towards rare-earth ion doped on-chip integrated photonics</i>	Sonia García Blanco , University of Twente, The Netherlands Abstr.
16:10-16:25		<i>Low-loss, Nonlinear BaTiO₃-Si-Photonic Waveguide Structures</i>	Felix Eltes , IBM Research – Zurich, Switzerland Abstr.
16:25-16:40		<i>Optimization of a hybrid BaTiO₃/Si Waveguide Structure for Electro-optic Modulation</i>	Pau Castera , NTC-UPV, Spain Abstr.
16:40-16:55		<i>Ultrafast control of plasmonic nanoantennas driven by hot-spot induced phase-transition in VO₂</i>	Nerea Zabala , UPV/EHU, CFM and DIPC, Spain Abstr.
16:55-17:30	Coffee Break - Poster Session & Instrument Exhibition		

Figure 7. Session organized during the 5th Spanish Nanophotonics Conference.

We have partly supported the symposium entitled “Integration of Functional Oxides with Semiconductors” in the MRS (Material Research Society) Fall Meeting that was held on December 2015 in Boston (USA). The symposium was co-organized by Jean Fompeyrine (IBM). With this action the SITOGA and EU logos appeared on the printed program, the web site and during the symposium which contributed to increase the project visibility within the USA scientific community.

Some of the partners, Catherine Dubourdieu from CNRS-INL and Chiara Marchiori from IBM, organized a symposium on “Multifunctional binary and complex oxides films and nanostructures for nanoelectronics and energy applications - II” in the E-MRS Spring Meeting, which was held on May 2015 in Lille, France. The symposium was aimed at bringing together and bridging scientists working on different areas of synthesis, structural/physical characterization and integration of functional metal oxides for application in information and energy technologies.

Within the French network CNRS “Functional oxides: from material to device” (directed by Catherine Dubourdieu, CNRS-INL), Régis Orobchouk (CNRS-INL) co-organized the Workshop “Oxides for optics and photonics” which was held on December 2014 near Paris, France. Among the invited speakers - from both academia and industry (STMicroelectronics, Thalès TRT, HORIBA Jobin Yvon) - were two SITOGA partners (Guillaume Saint-Girons, CNRS-INL and Jean Fompeyrine, IBM Zürich).

3. Journal publications

The following journal publications have been carried out in leading international journals:

1. A. Rosa, D. Tulli, P. Castera, A. M. Gutierrez, A. Griol, M. Baquero, B. Vilquin, F. Eltes, S. Abel, J. Fompeyrine and P. Sanchis, "Barium Titanate (BaTiO₃) RF Characterization for Application in Electro-Optic Modulators", submitted for publication.
2. L. Sánchez, A. Rosa, A. Griol, A. Gutierrez, P. Homm, B. Van Bilzen, M. Menghini, J.P. Locquet, and P. Sanchis, "Impact of the external resistance on the switching power consumption in VO₂ nano gap junctions", submitted for publication.
3. K. J. Kormondy, Y. Popoff, M. Sousa, F. Eltes, D. Caimi, M. D. Rossell, M. Fiebig, P. Hoffmann, C. Marchiori, M. Reinke, M. Trassin, A. A. Demkov, J. Fompeyrine, and S. Abel, "Microstructure and ferroelectricity of BaTiO₃ thin films on Si for integrated Photonics", *Nanotechnology*, vol. 28, pp. 75706, 2017.
4. M. Reinke, Y. Kuzminykh, F. Eltes, S. Abel, T. LaGrange, A. Neels, J. Fompeyrine, and P. Hoffmann, "Low Temperature Epitaxial Barium Titanate Thin Film Growth in High Vacuum CVD", *Adv. Mater. Interfaces*, 1700116, 2017.
5. L. Sanchez, F. Cortés-Juan, A. Rosa, P. Sanchis, "Ultra-compact electro-absorption VO₂-Si modulator with TM to TE conversion", *Journal of Optics*, vol. 19, no. 3, pp. 035401 (1-6), 2017.
6. P. Castera, A.M. Gutierrez, D. Tulli, S. Cueff, R. Orobtcchouk, P. Rojo Romeo, G. Saint-Girons, and P. Sanchis, "Electro-Optical Modulation based on Pockels effect in BaTiO₃ with a Multi-Domain Structure", *IEEE Photon. Tech. Lett.*, vol. 28, no. 9, pp. 990-993, 2016.
7. F. Eltes, D. Caimi, F. Fallegger, M. Sousa, E. O'Connor, M. D. Rossell, B. Offrein, J. Fompeyrine, and S. Abel, "Low-Loss BaTiO₃-Si Waveguides for Nonlinear Integrated Photonics," *ACS Photonics*, vol. 3, no. 9, pp. 1698–1703, 2016.
8. S. Abel, T. Stöferle, C. Marchiori, D. Caimi, L. Czornomaz, M. Stuckelberger, M. Sousa, B. J. Offrein, and J. Fompeyrine, "A hybrid barium titanate–silicon photonics platform for ultra-efficient electro-optic tuning", *J. Light. Technol.*, vol. 34, pp. 1688-1693, 2016.
9. L. Sanchez, S. Lechago, A. Gutierrez and P. Sanchis, "Analysis and design optimization of a hybrid VO₂/Silicon 2x2 microring switch", *IEEE Photonics Journal*, vol.8, no-2, pp. 7802709-1/10, 2016.
10. M. Scigaj, C. H. Chao, J. Gázquez, I. Fina, R. Moalla, G. Saint-Girons, M. F. Chisholm, G. Herranz, J. Fontcuberta, R. Bachelet, and F. Sánchez, "High ferroelectric polarization in c-oriented BaTiO₃ epitaxial thin films on SrTiO₃/Si(001)", vol. 109, pp. 122903, 2016.
11. P. Bakalov, D. Nasr Esfahani, L. Covaci, F. M. Peeters, J. Tempere and J.-P. Locquet, "An electric-field driven Mott metal-insulator transition in correlated thin films: an inhomogeneous dynamical mean-field theory approach", *Physical Review B*, vol. 93, pp. 165112, 2016.
12. A. Brimont, X. Hu, S. Cueff, P. Rojo Romeo, G. Saint Girons, A. Griol, A. Zanzi, P. Sanchis, R. Orobtcchouk, "Low-loss and compact silicon rib waveguide bends", *IEEE Photon. Tech. Lett.*, vol. 28, no. 3, pp. 299-302, 2016.
13. P. Homm, L. Dillemans, M. Menghini, B. van Bilzen, P. Bakalov, C.-Y. Su, R. Lieten, M. Houssa, J.-P. Locquet, "Collapse of the low temperature insulating state in Cr-doped V₂O₃ thin films", *App. Phys. Lett.*, vol. 107, pp. 111904, 2015.
14. B. van Bilzen, P. Homm, L. Dillemans, C.-Y. Su, M. Menghini, M. Sousa, C. Marchiori, J. Fompeyrine, L. Zhang, J. W. Seo and J.-P. Locquet, "Production of VO₂ thin films through post deposition annealing of V₂O₃ and VO_x films", *Thin Solid Films*, vol. 591, pp. 143-148, 2015.
15. P. Castera, D. Tulli, A.M. Gutierrez, P. Sanchis, "Influence of BaTiO₃ ferroelectric orientation for electro-optic modulation on silicon", *Optics Express*, vol. 23, no. 12, pp. 15332-15342, 2015.
16. K. J. Kormondy, S. Abel, F. Fallegger, Y. Popoff, P. Ponath, A.B. Posadas, M. Sousab, D. Caimi, H. Siegwart, E. Uccelli, L. Czornomaz, C. Marchiori, J. Fompeyrine, A. A. Demkova, "Analysis of the

Pockels effect in ferroelectric barium titanate thin films on Si(001)", *Microelectronic Engineering*, vol. 147, pp. 215-218, 2015.

17. L. Sánchez, S. Lechago, and P. Sanchis, "Ultra-compact TE and TM pass polarizers based on vanadium dioxide on silicon", *Optics Letters*, vol. 40, no. 7, pp. 1452-1455, 2015.
18. X. Hu, S. Cueff, P. Rojo Romeo, R. Orobtcchouk, "Modeling the anisotropic electro-optic interaction in hybrid silicon-ferroelectric optical modulator", *Optics Express*, Vol. 23, Issue 2, pp. 1699-1714, 2015.

4. Conference publications

We have contributed, in some cases as invited talks, in the following international conferences and workshops:

1. P. Sanchis, L.D. Sánchez, T. Angelova, A. Griol, M. Menghini, P. Homm, B. van Bilzen, and J.-P. Locquet, L. Zimmermann, "Recent advances in hybrid VO₂/Si devices for enabling electro-optical functionalities", *Proc. SPIE 10106, Integrated Optics Conference, SPIE Photonics West, San Francisco (USA), January 29 – February 2, 2017 (invited)*.
2. G. Saint-Girons, S. Cueff, B. Meunier, R. Bachelet, J. Penuelas, R. Orobtcchouk, P. Rojo-Romeo, B. Vilquin, P. Regreny, G. Grenet, L. Largeau, G. Agnus, V. Pillard, D. Le Bourdais, P. Lecoeur, P. Castera, A. Rosa, A.M. Gutierrez, T. Angelova, A. Griol, P. Sanchis, S. Abel, J. Fompeyrine, "Functional oxides for optical devices, E-MRS 2016 Fall Meeting, sept. 19-22 2016, Warsaw (Poland) (invited)
3. M. Menghini et al., "The metal insulator transition and resistance switch in vanadium oxide", *Workshop on Memristive Networks for Future Computing, August 29- September 2, 2016, Ghent, Belgium (invited)*.
4. L.D. Sánchez, T. Angelova, J. Hurtado, A. Griol, P. Sanchis, M. Menghini, P. Homm, B. van Bilzen, A. Brown and J.-P. Locquet, L. Zimmermann, "Electrical switching in hybrid VO₂/Si photonic structures", paper Tu.D5.4, *18th International Conference on Transparent Optical Networks (ICTON), Trento, Italy, July 10-14, 2016 (invited)*.
5. S. Cueff, P. Rojo Romeo, R. Orobtcchouk, B. Wague, B. Vilquin, P. Regreny, G. Saint-Girons, P. Castera, A. Rosa, A.M. Gutierrez, T. Angelova, A. Griol, P. Sanchis, "Hybrid Silicon-Ferroelectric Oxide Platform for Tunable Nanophotonics on Silicon", paper Tu.C5.3, *18th International Conference on Transparent Optical Networks (ICTON), Trento, Italy, July 10-14, 2016 (invited)*.
6. P. Rojo Romeo, B. Wague, X. Hu, S. Cueff, R. Orobtcchouk, G. Saint Girons, B. Vilquin, "Low loss hybrid Silicon/ferroelectric oxides integrated optical devices on SOI", *CMOS Emerging Technologies Conference, Montreal (Canada) , May 25-27, 2016 (invited)*.
7. P. Rojo Romeo, B. Wague, S. Cueff, R. Orobtcchouk, G. Saint Girons, B. Vilquin, P. Castera, A. M. Gutierrez, A. Griol, P. Sanchis, "Functional Oxides for on-chip Silicon Photonics" *Applications. Colloque National 2016 du GDR OXYFUN, Autrans (Isère) 20 – 23 Mars 2016*.
8. P. Castera, A. Rosa, D. Tulli, A. M. Gutierrez, S. Cueff, R. Orobtcchouk, P. Rojo Romeo, G. Saint-Girons and P. Sanchis, "Towards High-Speed Electro-Optical Performance in a Hybrid BaTiO₃/Si Mach-Zehnder Modulator", pp. 54-55, *IEEE 13th International Conference on Group IV Photonics, Shanghai (China), August 24-26, 2016*.
9. P. Castera, A.M. Gutierrez, A. Rosa, D. Tulli, P. Sanchis, "Optimization of a hybrid BaTiO₃/Si Waveguide Structure for Electro-optic Modulation", pp. 22, *Conferencia Española de Nanofotónica, Valencia, España, June 20-22, 2016*.
10. P. Castera, A.M. Gutierrez, A. Rosa, D. Tulli, P. Sanchis, "Optimization of a BaTiO₃ on Silicon Waveguide Structure for Electro-Optic Modulation", paper 43, *18th European Conference on Integrated Optics, May 18-20, Warsaw (Poland), 2016*.

11. P. Homm, B. Bilzen, M. Menghini, J.-P. Locquet, T. Ivanova, L. Sanchez, P. Sanchis, "Vanadium dioxide thin films prepared on silicon by low temperature MBE growth and ex-situ annealing" APS, March Meeting 2016, March 14-18, Baltimore, USA, 2016.
12. S. Cuffe, R. Orobtcouk, P. Rojo-Romeo, B. Wague, X. Hu, R. Bachelet, P. Regreny, B. Vilquin and G. Saint-Girons, "Ferroelectric-oxide-based slot waveguides monolithically integrated on silicon for optoelectronics", SPIE Photonic West, San Francisco (USA), February 13-18, 2016.
13. M. Menghini et al., "Exploring the metal-insulator transition in pure and doped V_2O_3 (ultra)thin films", TRENDOXIDES 2015, Brescia, Italy, 18th November, 2015 (**invited**).
14. S. Cuffe, R. Orobtcouk, P. Rojo-Romeo, B. Wague, X. Hu, R. Bachelet, P. Regreny, B. Vilquin and G. Saint-Girons, "Hybrid silicon-ferroelectric oxide slot waveguide for on-chip optoelectronics", MRS Fall Meeting, Boston (USA), 29 Nov- 4 Dec, 2015.
15. S. Abel, T. Stöferle, C. Marchiori, D. Caimi, L. Czornomaz, M. D. Rossell, R. Erni, M. Sousa, H. Siegwart, B. J. Offrein, and J. Fompeyrine, "Barium-titanate integrated with silicon photonics for ultraefficient electro-optical performance", European Conference on Optical Communication (ECOC), Valencia (Spain), 27 Sep-1 Oct, 2015.
16. P. Castera, D. Tulli, A. M. Gutierrez and P. Sanchis, "Highly efficient $BaTiO_3$ on Silicon Electro-Optic Mach-Zehnder Modulator", 12th International Conference on Group IV Photonics, Vancouver (Canada), August 26-28, 2015.
17. L. Sánchez, A. M. Gutierrez, A. Brimont and P. Sanchis, "Design of an ultra-compact hybrid VO_2 /silicon switch", 12th International Conference on Group IV Photonics, Vancouver (Canada), August 26-28, 2015.
18. K. J. Kormondy, S. Abel, F. Fallegger, Y. Popoff, P. Ponath, A. B. Posadas, M. Sousa, D. Caimi, H. Siegwart, E. Uccelli, L. Czornomaz, C. Marchiori, J. Fompeyrine, and A. A. Demkov, "Analysis of the Pockels effect in ferroelectric barium titanate thin films on Si(001)," 19th Conference on "Insulating Films on Semiconductors", Udine, Italy, July 2015.
19. F. Eltes, S. Abel, F. Fallegger, K. Kormondy, T. Stöferle, D. Caimi, L. Czornomaz, C. Marchiori, M. Rossell, R. Erni, M. Sousa, B. Offrein, J. Fompeyrine "Propagation losses in hybrid $BaTiO_3$ /silicon photonic waveguides", Symposium O, Fall EMRS 2015, Warsaw (Poland), September 2015.
20. J. Fompeyrine et al., "Oxides for photonics", COST TO-BE Workshop , Aveiro (Portugal), March 2015 (**invited**).
21. J. Fompeyrine et al., "Functional oxides for integrated photonics", Symposium L, Fall EMRS 2015, Warsaw (Poland), September 2015 (**invited**).
22. P. Sanchis, L.D. Sánchez, A. Griol, J. Hurtado, M. Menghini, P. Homm, B. van Bilzen, A. Brown and J.-P. Locquet, "Ultra-Low Power Hybrid VO_2 /Si Photonic Microring Switch", 17th International Conference on Transparent Optical Networks (ICTON), Budapest, Hungary, July 5-9, 2015 (**invited**).
23. P. Rojo Romeo, X. Hu, S. Cuffe, R. Orobtcouk, B. Vilquin, R. Bachelet, G. Grenet, C. Dubourdieu, P. Regreny, G. Saint-Girons, P. Castera, A.M. Gutierrez, N. Sanchez, T. Angelova, P. Sanchis, S. Abel, J. Fompeyrine, "Integration of functional oxides on SOI for agile silicon photonics", , 17th International Conference on Transparent Optical Networks (ICTON), Budapest, Hungary, July 5-9, 2015 (**invited**).
24. K. J. Kormondy, S. Abel, F. Fallegger, Y. Popoff, P. Ponath, A. B. Posadas, M. Sousa, D. Caimi, H. Siegwart, E. Uccelli, L. Czornomaz, C. Marchiori, J. Fompeyrine, and A. A. Demkov, "Ferroelectric $BaTiO_3$ thin films on silicon: crystalline structure and electro-optic response," Spring EMRS 2015, Lille, France, May 2015.
25. K. J. Kormondy, F. Fallegger, S. Abel, Y. Popoff, P. Ponath, A. B. Posadas, M. Sousa, D. Caimi, H. Siegwart, E. Uccelli, L. Czornomaz, A. A. Demkov, C. Marchiori, and J. Fompeyrine, "Barium titanate epitaxial films on silicon: structure and electro-optic properties," EuroMBE 2015, March 2015, Canazei, Italy.
26. K. J. Kormondy, F. Fallegger, S. Abel, Y. Popoff, P. Ponath, A. B. Posadas, M. Sousa, D. Caimi, H. Siegwart, E. Uccelli, L. Czornomaz, C. Marchiori, J. Fompeyrine, and A. A. Demkov, "Integrated

- silicon nanophotonics: structure and electro-optic properties of BaTiO₃ on Si(001),” APS March Meeting, March 2015, San Antonio, USA.
27. S. Abel et al, “Oxides for photonics”, Symposium FF, Fall MRS 2015, Boston (USA) **(invited)**.
 28. J.-P. Locquet et al, “The Metal-Insulator Transition in Vanadium Oxide Based Films and Heterostructures”, Symposium FF, Fall MRS 2015, Boston (USA) **(invited)**.
 29. X. Hu, R. Orobtcchouk, “Full-vectorial finite-difference analysis of ferroelectric BaTiO₃ device”, The XXII International Workshop on Optical Wave & Waveguide Theory and Numerical Modelling, 2014.
 30. S. Cueff, X. Hu, R. Orobtcchouk, P. Rojo-Romeo, R. Bachelet, P. Regreny, B. Vilquin, L. Louahadj, L. Mazet, G. Grenet, J. Penuelas, C. Dubourdieu, C. Botella, X. Letartre and G. Saint-Girons, P. Castera, N. Sanchez, T. Angelova, L. Bellieres, A. Griol, F. Lopez-Royo, A. M. Gutierrez, P. Sanchis, “Electro-optic modulation using hybrid silicon-ferroelectric oxide slot waveguide”, OXYFUN Workshop, December 2014.
 31. G. Saint-Girons, S. Cueff, B. Meunier, X. Hu, L. Louahadj, L. Mazet, R. Orobtcchouk, P. Rojo-Romeo, R. Bachelet, B. Vilquin, P. Regreny, N. Chauvin, G. Grenet, J. Penuelas, A. Danescu, C. Dubourdieu, X. Letartre, G. Renaud, V. Favre-Nicolin, N. Blanc, T. Zhou, M. Silly, F. Sirotti, L. Largeau, G. Agnus, V. Pillard, D. Le Bourdais, P. Lecoer, “Heterostructures combining functional oxides and semiconductors for integrated photonics”, OXYFUN Workshop, December 2014 **(invited)**
 32. P. Sanchis, L. Sánchez, P. Castera, A. Rosa, A. M. Gutierrez, A. Brimont, G. Saint-Girons, R. Orobtcchouk, S. Cueff, P. Rojo-Romeo, R. Bachelet, P. Regreny, B. Vilquin, C. Dubourdieu, X. Letartre, G. Grenet, J. Penuelas, X. Hu, L. Louahadj, J.-P. Locquet, L. Zimmermann, C. Marchiori, S. Abel, J. Fompeyrine, and A. Hakansson “Silicon CMOS compatible transition metal oxide technology for boosting highly integrated photonic devices with disruptive performance”, 16th International Conference on Transparent Optical Networks (ICTON), Graz, Austria, July 7-10, 2014 **(invited)**.
 33. X. Hu, R. Orobtcchouk, S. Cueff, P. R. Rojo Romeo, P. Regreny, R. Bachelet, L. Mazet, L. Louahadj, Ramah Moalla, C. Dubourdieu, B. Vilquin, G. Saint Girons, P. Castera, N. Sanchez, T. Angelova, A. Griol, A. M. Gutierrez, P. Sanchis “Slot waveguide electro-optic modulator with ferroelectric oxide BaTiO₃ on Silicon”, 11th International Conference on Group IV Photonics, Paris (France), August 27-29, 2014.
 34. Sébastien Cueff, Xuan Hu, Régis Orobtcchouk, Pedro Rojo Romeo, Romain Bachelet, B. Vilquin, M. Hayes, C. Dubourdieu, P. Regreny, G. Grenet, Guillaume Saint-Girons, Pau Castera, Nuria Sanchez, Todora Angelova, Laurent Bellieres, Amadeu Griol, Francisco López, Ana M. Gutierrez, Pablo Sanchis, “Electro-optic modulation with functional oxides monolithically integrated on silicon”, Silicon Photonics Summer School organized by PLAT4M project, June 29-July 4, 2014.

6. PhD and Master Thesis

The following PhDs have been carried out in the framework of the project:

- Álvaro Rosa Escutia, “High-efficient electrodes for novel optoelectronic devices in silicon photonics”, planned for December 2017. Supervisor: Pablo Sanchis Kilders.
- Bart Van Bilzen, “Vanadium oxide for neuromorphic applications”, planned for October 2017. Supervisor: Jean Pierre Locquet.
- Pau Castera Molada, “Development of new photonic devices based on barium titanate in silicon”, planned for June 2017. Supervisors: Pablo Sanchis Kilders and Ana M. Gutierrez Campos.
- Luis David Sánchez Diana, “High performance photonic devices for switching applications in silicon photonics”, December 2016. Supervisor: Pablo Sanchis Kilders.
- Xuan Hu, “Etude et caractérisation de composants d’optique intégrée exploitant les propriétés électro-optiques d’oxydes fonctionnels épitaxiés”, February 2016. Supervisor: Regis Orobtschouk.
- Stefan Abel, "Electro-optic photonic devices based on epitaxial barium titanate thin films on silicon", February 2014. Supervisor: Alexei Tcheltnokov.

The following MSc have also been involved with the project:

- Johanna Nordlander, Lund, 06/2016, "Electro-optical characterization of BaTiO₃ based active photonic devices on silicon"
- Muriel Blum, "Optimization of Functional Properties of Barium Titanate Thin Films", EPFL, 04/2016.
- Viola Vogler, "Strain-dependent EO properties of BTO/Si thin films", ETH, 10/2015.
- Felix Eltes, "Propagation losses in BaTiO₃-based waveguides on silicon", Lund University, 06/2015.
- Florian Fallegger, "Ferroelectric characterization of epitaxial barium titanate thin films integrated on silicon", ETH, 03/2015.
- Anton Brown, "Electric field induced metal-insulator transition in VO₂ for novel applications", KULeuven, 05/2015.

7. Other dissemination activities

The following dissemination activities have also been carried out:

- A press release was launched at the beginning of the project by UPVLC (project coordinator). The press release appeared in more than 20 media in Spain and also on the Nanotechnology Now website. Furthermore, a video was also filmed and disseminated by UPVLC-TV. The video appeared for instance in the public urban bus network of the city of Valencia which transports a mean of 300.000 travelers per day.
- A video was disseminated by IBM for the Day of Photonics. (www.youtube.com/watch?v=zC3knz_WY2c)
- A LinkedIn group of the SITOGA project (<http://www.linkedin.com/groups/SITOGA-Silicon-CMOS-compatible-transition-7453878>) has been created.
- A specific section to Innovation and Technology has been created in the SITOGA website (in Documents) with two white papers describing BaTiO₃/Si and VO₂/Si technologies and their impact for photonic applications.
- A press release is also planned for the end of the project summarizing the main achievements.