

8<sup>th</sup> International Symposium on Group Five Elements  
Málaga, 24-27 June, 2014

Tuesday 24th

18:00 – 20:00 Registration

20:30 Welcome Reception at “Lamoraga Antonio Martin”

Wednesday 25th

9:00 – 9:25 Conference Opening Ceremony

9:25 – 10:10 Plenary 1

Chair Session: M.O. Guerrero-Pérez (Universidad de Málaga, Spain)

“Structure-Activity Relationships for Oxidation and Ammoxidation in Vanadia and in Niobia-based Catalysts: Molecular Dispersed, Support-Stabilized Nanoscaled Oxides and Bulk Oxides”

M.A. Bañares

10:10 – 13:30 Oral Session 1

Chair Session: Guido Busca (Università di Genova, Italy)

**O1 10:10 – 10:30**

“A critical literature review of the kinetics for the oxidative dehydrogenation of propane over well-defined supported vanadium oxide catalysts”

*C. A Carrero, R. Schlögl, I. E. Wachs, R. Schomäcker*

**O2 10:30 – 11:10**

“Improved selective oxidation of n-butane to maleic anhydride over latest generation SynDane vanadyl pyrophosphate catalysts”

G. Mestl

**O3 11:10 – 11:30**

“Substituted-hexagonal tungsten bronzes: correlation between physical-chemical features and catalytic performance. The example of glycerol oxidehydration.”

*A. Chieregato, M. D. Soriano, E. García-González, S. Zamora, F. Basile1, P. Concepción, F. Cavani1, J. M. López Nieto*

11:30 – 12:00 Coffee Break



## Scientific Program

### O4 12:00 – 12:20

“Pseudo-tetrahedral V species as the active sites of the selective oxidative dehydrogenation of propane”

*S. Dzwigaj, K. Chalupka, C. Thomas, Y. Millot, F. Averseng*

### O5 12:20 – 12:40

“Total oxidation of VOCs in vanadia-promoted platinum-alumina catalysts: influence of the order of impregnation”

*B. Solsona, A. Dejoz, T. García, S. H. Taylor*

### O6 12:40 – 13:00

“Exposing the Synergistic Effect between Copper and Vanadium in AlPO-5 for the Selective Oxidation of Propene”

*K. L. Bøyesen and K. Mathisen*

### O7 13:00 – 13:20

“5-hydroxymethyl furfural production from glucose aqueous solution over Nb<sub>2</sub>O<sub>5</sub> with water-tolerant Lewis acid site”

*K. Nakajima, M. Kitano, M. Hara*

## 13:30 – 15:00 Lunch

### 15:00 – 15:45 Plenary 2

Chair Session: Israel E. Wachs (Lehigh University, USA)

“Theoretical insights on V<sub>2</sub>O<sub>5</sub> materials: from the gas phase to supported catalysts”

*M. Calatayud*

### 15:45 – 19:15 Oral Session 2

Chair Session: Israel E. Wachs (Lehigh University, USA)

### O8 15:45 – 16:05

“A first-principles modeling of glycerol and ammonia interactions on the cation-deficient VSbO<sub>4</sub>(110) surface”

*I. M. Alliaty and B. L. Irigoyen*

### O9 16:05 – 16:25

“Model Studies on Vanadia on Planar Oxide Supports: Continued”

*S. Shaikhutdinov*

### O10 16:25 – 16:45

“Catalytic fast pyrolysis of cellulose and xylan over V<sub>2</sub>O<sub>5</sub> loaded catalysts”

*Y-K. Park, S. H. Jin, J-K. Jeon, S. Hoon*



**O11 16:45 – 17:05**

“Mesostuctured vanadia-alumina catalysts for the synthesis of vitamin K3”

*R.S. Marin, M. Florea, F.M. Palasanu, F. Neatu, V.I. Parvulescu*

**O12 17:05 – 17:25**

“V(V)-Aminotriphenolate Complexes as Effective Catalysts for Oxidations”

*G. Licini, E. Amadio, E. Badetti, C. Zonta*

**17:25 – 17:55 Coffee Break**

**O13 17:55 – 18:15**

“Biofuel Steam Reforming Catalyst for Fuel Cell Application”

*P. Kowalik, M.A. Larrubia, C. Herrera, L.J. Alemany, I. S.Pieta*

**O14 18:15 – 18:35**

“Vanadium Oxo Organometallic Species Supported on Silica for the Selective Non-oxidative Dehydrogenation of Propane”

*K. C. Szeto, B. Loges, N. Merle, N. Popoff, A. Quadrelli, H. Jia, E. Berrier, J. Thivolle-Cazat, A. De Mallmann, L. Delevoye, R. Gauvin, M. Taoufik*

**O15 18:35 – 18:55**

“Vanadium - Based Mixed Oxides for Ethanol Transformation”

*A. Malmusi, M. Dellapasqua, J. Velasquez Ochoa, F. Cavani*

**O16 18:55 – 19:15**

“Influence of the molybdenum salts precursor on the molybdenum speciation and catalytic properties of V-Mo-ZSM-5 prepared by solid-state reaction”

*I. Mejri, F. Ayari, M. Mhamdi, A. Ghorbell, G. Delahay*

**19:30 - 23:00 Guided visit to Malaga old City with dinner at Pimpi Restaurant.**



**Thursday 26th**

**8:30 – 9:15 Plenary 3**

Chair Session: M.O. Guerrero-Pérez (Universidad de Málaga, Spain)

“V-catalysis in Sustainable Oxidations with H<sub>2</sub>O<sub>2</sub>”

V. Conte, B. Floris, P. Galloni

**9:15 – 11:15 Oral Session 3**

Chair Session: Miguel A. Bañares (ICP CSIC, Spain)

**O17 9:15 – 9:35**

“New developments in Raman spectroscopy”

S. Maussang

**O18 9:35 – 9:55**

“Multinuclear SSNMR/DFT GIPAW for molecular structure and reactivity relationships for supported vanadia catalysts”

O. Lapina, E. Papulovskiy, D. Khabibulin, A. Shubin, I. Wachs

**O19 9:55 – 10:15**

“Benefits and limitations of multiwavelength Raman and DR UV–vis spectroscopy in characterization of VOX/SiO<sub>2</sub> complexes speciation”

M. Setnička, R. Bulánek, P. Čičmanec

**O20 10:15 – 10:35**

“The Lewis-Brønsted acid sites interplay on vanadia-based catalyst for NH<sub>3</sub>-SCR”

S. B. Rasmussen, M. H. Velk, M. Bañares, S. Mossin, P. Bazin, M. Daturi

**O21 10:35 – 10:55**

“Vanadium oxide supported on porous clay heterostructures for the partial oxidation of H<sub>2</sub>S to sulfur”

A. Natoli, J.A. Cecilia, M.D. Soriano, J. Jiménez-Jiménez, J.M. López-Nieto, E. Rodríguez-Castellón

**O22 10:55 – 11:15**

“VO<sub>x</sub>/TiO<sub>2</sub> catalyst activity in the simultaneous removal of NO<sub>x</sub> and PCDD”

M. Gallastegi-Villa, A. Aranzabal, J. A. González-Marcos, J. R. González-Velasco

**11:15 – 11:45 Coffee Break**



**11:45 – 13:00 Oral Session 4**

Chair Session: Goutam Deo (Lehigh University, India)

**O23 11:45 – 12:05**

“AuCu bimetallic system based on Nb/MCF and Nb<sub>2</sub>O<sub>5</sub> – surface characterization and catalytic activity in alcohols oxidation”

*I. Sobczak and L. Wolski*

**O24 12:05 – 12:25**

“Acetalization of glycerol with acetone over mesoporous cellular foams (MCF) modified with niobium and tantalum”

*V. Calvino-Casilda, K. Stawicka, M. Tredja, M. Ziolk, M.A. Bañares*

**O25 12:25 – 12:45**

“New niobium-phosphate-silicate catalysts for esterification reactions”

*R. Vitiello, R. Turco, R. Tesser, A. Gervasini, P. Carniti, G. Accardo, L. Minieri, A. Aronne, M. Di Serio*

**O26 12:45 – 13:05**

“Niobium Phosphate as Catalysts in the Acetalization Reaction”

*M. C. Reis, E. R. Lachter, R. A. S. San Gil, M. I. Pais da Silva, J. H. Flores*

**13:30 – 15:00 Lunch**

**15:00 – 17:00 Oral Session 5**

Chair Session: J. Rodríguez-Mirasol (Universidad de Málaga, Spain)

**O27 15:00 – 15:20**

“Insight into the interaction of hydrogen peroxide with niobium(V) and tantalum(V) oxides”

*M. Ziolk, I. Sobczak, P. Decyk, K. Domaradzka, P. Pietryzk, Z. Sojka*

**O28 15:20 – 15:40**

“Selective Cyclodehydration of Sorbitol over Layered Niobium/Tantalum Molybdate”

*A. Takagaki, Y. Morita, S. Furusato, S. Hayashi, R. Kikuchi, S. T. Oyama*

**O29 15:40 – 16:00**

“Nioboorganosilicates of SBA-15 and MCM-41-types as universal platforms for drug and vitamin administration”

*A. Wawrzynczak, K. Walczak-Zeidler, I. Nowak*

**O30 16:00 – 16:20**

“Grafted non-ordered niobium-silica catalysts for the selective oxidation of cyclic alkenes and substituted phenols”

*C. Tiozzo, O. A. Kholdeeva, I. D. Ivanchikova, R. Psaro, M. Guidotti*



## Scientific Program

### O31 16:20 – 16:40

“Amphiphilic niobium oxyhydroxide as catalyst for acetalisation of residual glycerol”  
*T. E. Souza, M. F. Portilho, P. P. Souza, I. D. Padula, M. M. G. Teodoro, L. C. A. Oliveira*

### O32 16:40 – 17:00

“The reduction of MCF synthesis time by the application of MPTMS and Nb or Ta”  
*K. Stawicka, V. Calvino-Casilda, M. Trejda, M.A. Bañares, M. Ziolek*

### 17:00 – 19:00 Poster Session

20:30 Gala Dinner (typical “Moraga” party) at Candado Club



**Friday 27th**

**8:30 – 9:15 Plenary 4**

Chair Session: M.O. Guerrero-Pérez (Universidad de Málaga, Spain)

“V- and/or Nb containing mixed oxides bronzes as multifunctional catalysts for the selective oxidative transformation of hydrocarbons”

*J. M. López Nieto*

**9:15 – 11:15 Oral Session 6**

Chair Session: M. Ziolk (AMU, Poland)

**O33 9:15 – 9:35**

“Single C-, N-doping and co-doping of Ta<sub>2</sub>O<sub>5</sub> for photodegradation of dye under UV or visible light”

*S. Liu, R. Ullah, H. Sun, S. Wang*

**O34 9:35 – 9:55**

“Photocatalytic Cross-Dehydrogenative Coupling Reactions Over Nb<sub>2</sub>O<sub>5</sub>”

*T. Shishido, A. Noda, Y. Ohno, H. Miura, S. Hosokawa, K. Teramura, T. Tanaka*

**O35 9:55 – 10:15**

“Construction of photocatalytic water splitting assemblies using nanostructured niobates”

*K. Maeda and T. E. Mallouk*

**O36 10:15 – 10:35 C.**

“Photocatalytic overall water splitting on a Ta-oxynitride with an adsorption band edge of ca. 600 nm”

*C. Pan, T. Takata, K. Domen*

**O37 10:35 – 10:55**

“Effect of the noble metal co-catalyst on the photocatalytic H<sub>2</sub> production over modified NaTaO<sub>3</sub> semiconductors”

*P. Jana, C. Mata Montero, J. M. Coronado, D. P. Serrano, V.A. de la Peña O'Shea*

**O38 10:55- 11:15**

“Synthesis, characterization and photocatalytic activity of N-doped TiO<sub>2</sub>/Nb<sub>2</sub>O<sub>5</sub>”

*A. M. Ferrari-Lima, R. P. de Souza, S. S. Mendes, R. G. Marques, M. L. Gimenes, N. R. C. Fernandes-Machado*

**11:10 – 11:45 Coffee Break**



## Scientific Program

### 11:45 – 13:30 Oral Session 7

Chair Session: P. Maireles (Universidad de Málaga, Spain)

#### O39 11:45 – 12:05

“Emergence of Brönsted and Lewis Acid Sites on Ta<sub>2</sub>O<sub>5</sub> Layer on SBA-15.”

J. N. Kondo, S. Takao, Y-H Wang, T. Yokoi

#### O40 12:05 – 12:25 M.

“Mesoporous tantalum oxide as catalyst for dehydration of glucose to 5-hydroxymethylfurfural”

*I. Jiménez-Morales, M. Moreno-Recio, J. Santamaría-González, P. Maireles-Torres, A. Jiménez-López*

#### O41 12:25 – 12:45

“Ta-supported catalysts for DME production”

*M. Cortés-Reyes, M.V. Domínguez-Barroso, M.R. Díaz-Rey, M.A. Larrubia, C. Herrera, L.J. Alemany*

#### O42 12:45 – 13:05

“Dynamic Behaviour of the Tantalum Hydride Supported on MCM-41 in the Metathesis of Alkanes.”

*J. Thivolle-Cazat, S. Soignier, M. Taoufik, J-M Basset*

#### O43 13:05 – 13:25

“Nature of Catalytic Active Sites present on the surface of advanced bulk tantalum mixed oxide photocatalysts”

*I. E. Wachs, S. P. Phivilay, A. A. Puretzky, K. Domen*

**13:25 M.O. Guerrero-Perez, Universidad de Málaga (Spain)**

Concluding remarks





**Posters**

**P1**

“Catalytic Baeyer-Villiger oxidation of citral using mesoporous materials containing niobium and tin”

*A. Feliczak-Guzik, P. Nowak, A. Wawrzyńczak, I. Nowak*

**P2**

“Synthesis and characterization of cubic and hexagonal silicas modified with Nb, Al or Pt”

*A. Wawrzyńczak and I. Nowak*

**P3**

“Catalytic activity of supported Nb and Ta acid catalysts”

*A. E. Díaz-Álvarez and M. A. Bañares*

**P4**

“Comparative study of MCM-22 and MCM-56 modified with niobium and zirconium - metal impact on acidic and redox properties”

*A. Wojtaszek-Gurdak, A. Nowak, M. Ziolk*

**P5**

“Physico-chemical characterization of V-Mg-O mixed oxides. Catalytic performances in the oxidative dehydrogenation of ethane.”

*S. Slyemi, A. Barama, H. Mesaaoudi, R. Benrabaa*

**P6**

“VOX-Ti-SBA-15 catalysts with different ratio Ti/Si and V/Ti in oxidative dehydrogenation of n-Butane”

*L. Balatka, M. Setnička, P. Čičmanec, R. Bulánek, A. Zuka, J. Pastva*

**P7**

“Influence of guest VOx phase deposited on surface of porous support to its textural properties determined by physical adsorption”

*R. Bulánek, P. Čičmanec, M. Setnička, N. Drenchev*

**P8**

“An in-situ Raman and reactivity study of the transformations occurring in Nb-doped vanadyl pyrophosphate catalyst”

*G. Pavarelli, A. Caldarelli, F. Cavani, C. Cortelli, S. Luciani, M. A. Bañares*

**P9**

“Stability of niobium-silica catalysts in repeated liquid-phase epoxidation tests: in-framework and grafted mixed oxides”

*C. Tiozzo, C. Bisio, F. Carniato, A. Gervasini, P. Carniti, M. Guidotti*

**P10**

“Cyclohexyl Hydroperoxide Decomposition Catalyzed by Supported Tantalum Complexes”

*A. De Mallmann, R. P. Saint-Arroman, J. Thivolle-Cazat, F. Lefebvre*



## Scientific Program

### P11

“Influence of Niobium Oxide structure in the epoxidation reaction.”

*R. Turco, R. Vitiello, R. Tesser, A. Gervasini, P. Carniti, L. Minieri, P. Pernice, A. Aronne, M. Di Serio*

### P12

“Vanadium-aluminum based catalysts doped with iron for the selective oxidation of p-xylene”

*M. Florea, R.S. Marin, C. G. Rotaru, F. Neatu, V.I. Parvulescu*

### P13

**R. Portela**, ICP CSIC (Spain)

“Vanadia-titania based catalysts for ammonia removal”

*H. Chen, R. Portela, M. A. Bañares, K. L. Yeung*

### P14

“Niobium oxide modified catalyst for biodiesel production by esterification of fatty acids”

*F. Rodríguez-Fortes, B. Mérida, C. Herrera, M.A. Larrubia, L.J. Alemany*

### P15

“Surface chemical properties and catalytic performance in the 2-propanol decomposition of vanadium oxides supported on amorphous- $\text{AlPO}_4$ ”

*F. Blanco-Bonilla, D. Luna, J.M. Marinas, F.M. Bautista*

### P16

“A floating photocatalyst device based on polypropylene impregnated with niobium oxide”

*H. S. Oliveira, P. P. Souza, T. E. Souza, L. C. A. Oliveira*

### P17

“Nanostructured vanadium-doped iron oxide: catalytic oxidation of organic contaminants”

*H. S. Oliveira, F. C. C. Moura, L. C. A. Oliveira, P. P. Souza, P. S. O. Patrício, J. D. Ardisson, M. C. Pereira*

### P18

“V and V-P containing Zr-SBA-15 catalysts for dehydration of glycerol to acrolein”

*J.A. Cecilia, C. García-Sancho, R. Moreno-Tost, J. Mérida-Robles, J. Santamaría-González, P. Maireles-Torres*

### P19

“Water splitting efficiency of  $\text{InVO}_4$  catalysts synthesized by the hydrothermal process with various In/V molar ratio”

*Y-S. Lai, C-H. Yang, J-M. Jehng*

### P20

“Oxidative dehydrogenation of ethane over vanadium supported alumina, silica and alumina-SBA-15 materials. Characterization of  $\text{VO}_x$  species under reaction conditions.”

*L. Čapek, Š. Botková, K. Jenišťová, L. Smoláková, M. Setnička, R. Bulánek, P. Čičmanec*



**P21**

“Comparative study of Zr, Nb, Mo containing SBA-15 grafted with amino-organosilanes”

*M. Olejniczak and M. Ziolk*

**P22**

“Exploitation of niobium oxide effective acidity for xylose dehydration to furfural”

*M. J. Campos Molina, M. López Granados, A. Gervasini, P. Carniti*

**P23**

“Eco-friendly Synthesis of 2-Amino-4H-chromenes Catalyzed by Niobium Mesoporous Cellular Foams (NbMCF)”

*A.Smuszkwicz, M. Godino-Ojer, E. Pérez-Mayoral, I. Sobczak, A. J. López-Peinado, M. Ziolk, R. M. Martín-Aranda*

**P24**

“V, Nb and Ta alumina-supported catalysts for methanol dehydration”

*M. Cortés-Reyes, M.V. Domínguez-Barroso, M.R. Díaz-Rey, M.A. Larrubia, C. Herrera, L.J. Alemany*

**P25**

“Vanadium based Catalysts with Controlled Morphology and Porous Structure obtained by a simple and low cost method”

*M. O. Guerrero-Pérez, M. J. Valero-Romero, J. Rodríguez-Mirasol, T. Cordero*

**P26**

“Titania-Silica Supported Vanadia Catalysts for the ODH of Propane”

*S. Chakraborty, S. C. Nayak, G. Deo*

**P27**

“Mesoporous vanado-silicate materials prepared by direct synthesis and impregnation method”

*D. Švadlák, A. Kalužová, M. Setnička, Š. Botková, R. Bulánek, P. Čičmanec, J. Pastva, A. Zukal*

**P28**

“Olefin Hydro-Metathesis Versus Alkane Metathesis: Similarities and Differences”

*J. Thivolle-Cazat, F. Stoffelbach, M. Taoufik, V. Polshettiwar, J-M Basset*

**P29**

“The impact of various Nb containing supports on acid sites formation using MPTMS”

*K. Stawicka, M. Trejda, M. Ziolk*

**P30**

“New vanadia-based catalysts for the selective oxidation of methane to formaldehyde”

*P. Wallis, N. V. Kalevaru, E. Schönborn, S. Wohlrab, A. Martin*

**P31**

“NbMCF and ZrMCF mesostructured cellular foams as new supports for gold – surface and oxidative properties”

*I. Sobczak, M. Kozłowska, M. Ziolk*

