

CURRICULUM VITAE

• PERSONAL INFORMATION

Name: Alessandro Trovarelli

Date of birth: January 19th, 1962

Nationality: IT

ResearcherID: M-4325-2015

Scopus Author ID: 7003911417

Orcid ID: orcid.org/0000-0002-1396-4031

URL: <https://catalysis.uniud.it/>

• CURRENT POSITION

2003 – present: Full Professor of Industrial Chemistry, Dipartimento Politecnico, University of Udine, Udine, Italy

• PREVIOUS POSITIONS

1999-2003 Associate Professor of Industrial Chemistry, Department of Chemical Science and Technology, University of Udine, Udine, Italy

1998-1999 Associate Professor of Industrial Chemistry, Department of Chemical Engineering, University of Rome “La Sapienza”, Rome, Italy

1988-1998 Assistant Professor of Industrial Chemistry, Department of Chemical Science and Technology, University of Udine, Udine, Italy

1993 Research Associate, Dept. Chem. Eng., Colorado State University, Ft. Collins CO, (USA)

1992-1993 Research Associate, Dept. of Chemistry, University of Oregon, Eugene OR, (USA)

1991 Research Associate, Dept. of Solid State Chem. and Catalysis, University of Szeged (HU)

• MAJOR INSTITUTIONAL RESPONSIBILITIES AT UNIVERSITY

2021-present Pro Rector for Research - University of Udine

2020-present Coordinator, Bachelor course of Industrial Engineering for Environmental Sustainability, University of Udine

2016-2021 Coordinator of PhD Course in Environmental and Energy Engineering Science

2019-2020 Coordinator, Master course of Environment and Energy Engineering, University of Udine

2013-2015 Head, Department of Chemistry, Physics and Environment

2010-2013 Coordinator, Master course of Environment and Energy Engineering, University of Udine

2006-2010 Coordinator, Master course of Environmental Engineering, University of Udine

2007-present Founder and member of LOD s.r.l. Spin off company of University of Udine

2008-2013 Pro rector for Internationalization, University of Udine

2006-2009 Head, Department of Chemical Science and Technology, University of Udine

2005-2011 Member of Administrative Board of Sincrotrone Trieste, S.c.p.a.

2003-2006 Member of the Patent Committee, University of Udine

2003-2007 Member of the Spin-off Committee, University of Udine

2002-2008 Vice President and member of Administrative Board of Science & Tech. Park of Udine

• AWARDS, HONORS and RECOGNITIONS

2022 Mario Giacomo Levi Medal Award - Italian Chemical Society (Division of Industrial Chemistry)

2019-2021 Included in the list of top scientists from the study of Plos Biology

<https://doi.org/10.1371/journal.pbio.3000384> August 12, 2019 (in the last update at position 8415 from a list of over 190000 scientists; update 8/2022)

2015 University Research Program award - Ford Motor Company (Dearborn, MI, USA)

2014: Chairman of the first workshop on Fundamentals and applications of cerium dioxide in catalysis, Udine, Italy

2012: Chairman of 8th International Conference on f-Elements, Udine, Italy

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

During my academic career I have directly supervised several Master's students, 18 PhD students and 14 Post Doctoral researchers in industrial chemistry and catalysis.

• TEACHING ACTIVITIES

Lectures at undergraduate levels: Industrial Chemistry for the Environmental engineering program

Lectures at master level: Technology for air pollution control for the Environmental engineering program, Chemical reaction Engineering for the Environmental engineering program

Member of the jury for the selection of candidates for attending the PhD school of Chemical and Energy Technology of the University of Udine. Member of the jury for the award of PhD degree from several Italian and foreign universities.

• ORGANISATION AND BOARDS OF SCIENTIFIC MEETINGS

2021: Member of the scientific committee of 12th International Conference on H₂ production - held on line

2018: Member of the Conference Scientific Committee of the 3rd Conference on Fundamentals and applications of cerium dioxide in catalysis Barcelona- Spain.

2018: Member of the International Advisory Committee of ICFE 10 (10th International Conference on f elements- Lausanne Switzerland)

2017: Member of the National Scientific Committee of Europacat 2017- Florence Italy

2016: Member of International Advisory Board of International Conference on Rare Earths Development and Application 2016 Lanzhou, China;

2013: Member of International Advisory Board of International Conference on Rare Earths 2013 Ganzhou, China

2005: Member of Scientific Board of VI and VII International Workshop on Catalytic Combustion (IWCC)

• EDITOR/EDITORIAL BOARD MEMBERSHIP

2016- Guest Editor, Applied Catalysis B: Environmental, Forty years of catalysis by ceria: a success story

2015- Guest Editor, Catalysis Today, vol. 253, Fundamentals and applications of cerium dioxide in catalysis

2003- Guest Editor, Catalysis Today, vol. 77, 6th Italian Seminar on Catalysis: Fundamentals and applications to environmental problems

1999- Guest Editor, Catalysis Today, vol. 50(2), Recent Progress in catalysis by Ceria and Related Systems,

2012 – present: Member of Editorial Board of Applied Catalysis B: Environmental (Elsevier)

2007 – present: Member of Editorial Board of Journal of Rare Earths (Elsevier)

• REVIEWER/EVALUATOR

Expert reviewer for top interdisciplinary journals (Science, Nature, Nature Catalysis, Nature Communications, Angewandte Chemie, Journal of American Chemical Society....), leading catalysis journal (e.g. ACS Catalysis, Applied Catalysis B, Journal of Catalysis,) ~ 40 papers/year, and for major catalysis conferences (e.g. Europacat, NAM-NACS, ICC).

Evaluator of several research proposal for Ministry and national and international agencies and /or Universities. Evaluator for ERC projects. Participant to PhD committees in France, Spain, Netherland and Switzerland. He has been nominated in 2018 evaluator for the PNR project on Energy by the Ministry of Instruction, University and Scientific Research.

• RESEARCH INTERESTS

Overall: Development of materials for catalysis. Industrial Catalytic processes.

Specific: Ceria-based catalysts; Redox catalysis; Environmental catalysis.

• SCIENTIFIC PUBLICATIONS

Author or coauthor of ca. 200 scientific publications (Annex 1) in top international journals or books (Scopus H-index=59, n. of citations > 16000; ISI H-index=58, n. of citations > 15300; Google Scholar H-index=65, n. of citations > 22700; ref. December 2022). Coauthor of 6 international patents (Annex 2). Editor of 2 books published by Imperial College Press/World Scientific. Guest Editor of 4 special issues in international catalysis journals.

Author/coauthor of several highly cited/top cited papers:

Catal. Rev. Sci. Eng. 38, 439, 1996 (3129 citations); J. Catal. 168, 151, 1995 (891 cit.); Catal. Tod. 50, 353, 1999 (847 cit.); J. Catal. 169, 490, 1997 (403 cit.); ACS Catalysis 4, 172, 2014, (340 cit.); ACS Catalysis 7, 4716, 2017 (400 cit.). Source Scopus December 2022.

• FUNDING ID AND INDUSTRIAL RESEARCH PROJECTS

PI of several national and international industrial grants from 2000 to 2021 (total ca. 2.5 M€) by leading international Companies and institutions.

Coordination/participation to research projects (Natnl. and International Agencies)

2017-2019 Interreg European project Coat4Cata "Development of coating and coating processes for catalytic exhaust gas cleaning"

2012-2014 Research project from Regione FVG "Sviluppo di filtri catalitici antiparticolato ad alta efficienza per una sostenibile mobilità compatibile con Euro6"

2010-2013 Interreg European project Mat4Cata "New materials for treatment of exhaust from internal combustion engines"

2008-2011 Research project from Regione FVG "Catalytic abatement of formaldehyde from indoor environments"

2008-2009 Research project from Regione FVG "Catalizzatori nanostrutturati per la produzione di idrogeno II"

2007-2009 Research project from regione FVG "Catalytic filters for exhaust gas treatment"

2006-2007 Research project from regione FVG "Catalizzatori nanostrutturati per la produzione di idrogeno"

2006-2009 PRIN Project- Italian Ministry of Research "Preparation and characterization of catalytic materials for combustion confined in microspaces"

2005-2008 FISR Project- Italian Ministry of Research "Celle a combustibile ad elettroliti polimerici e ceramici: dimostrazione di sistemi e sviluppo di nuovi materiali"

2005-2008 FISR Project- Italian Ministry of Research "Matrici di microcombustori a idrogeno"

2004-2006 PRIN Project- Italian Ministry of Research “Advanced ceria-based low temperature shift catalysts for generating hydrogen for PEM fuel cells: a kinetic and mechanistic study”
2003-2005 Research project from regione FVG “Materiali ad alta stabilità termica e resistenza all’avvelenamento da zolfo per il trattamento catalitico di reflui da processi di combustione di origine civile, industriale e da autovetture”
2003-2006 Coordinated Action FPVI – “Coordination of Nanostructured Catalytic Oxide Research and Development in Europe”
2003-2006 FIRB Project- Italian Ministry of Research “Materiali con caratteristiche redox per l’attivazione ossidativa in condizioni anaerobiche di paraffine leggere “
2002-2004 PRIN Project - Italian Ministry of Research “Advanced low-temperature shift catalysts for on board hydrogen generation”

Industrial R&D projects (last 5 years):

2019-2022 Treibacher AG (Austria) Development and characterization of perovskites for catalysis
2019-2020 Umicore AG (Germany) Development, synthesis and characterization of novel doped ceria based mixed oxides as PGM carrier materials for lean conditions oxidation catalysis
2018-2019 ENI S.p.A., Direct oxidation of methane to methanol
2017-2019 Umicore AG (Germany), Ceria-based catalysts for NO_x removal
2015-2019 Ford Motor Company, URP Award: Three-Way Catalyst Materials for Natural Gas Vehicles
2014-2016 Treibacher Industrie, (Austria) Characterization of SCR powder catalysts
2016-2017 Sasol GmbH (Germany), SO₂ adsorption/desorption on doped Al₂O₃

Cooperation and consulting service with industry:

Treibacher Industrie AG (2001-2022)
Ford Motor Company (1998-2000; 2015-2019)
Umicore AG (2017-2020)
Sasol GmbH (2016-2017)
ENI S.p.A. (2017-2019)
Danieli Officine Meccaniche S.p.A. (2012-2014; 2022)
Rhodia Operations/Solvay (2021-2022)
Grace Davison (2003-2005)
Snamprogetti (1999-2001)
Mel Chemicals (1997-1998)
United Catalysts (USA) (1997-1998)

• TEN YEARS TRACK RECORD

In the last 10 years (2013-2022) I have published 74 papers receiving 2528 citations, 4 book chapters and 3 patents. Most of these papers appeared in top journals like *Angewandte Chemie Int. Ed.*, *Nature Communications*, *ACS Catalysis*, *Appl. Catal. B: Environ*, *J. Catalysis*. I have published the second edition of: “*Catalysis by Ceria and Related Materials*”, Imperial College Press, London (2013), A. Trovarelli and P. Fornasiero (Eds.) and edited a special issue of *Applied Catalysis B* entitled 40 years of Catalysis by Ceria: A success story (*Appl. Catal. B: Environ.* 197, 2016, 1).

Selected invited lectures in last ten years:

Besides many oral contributions to symposiums, in 2013-2022 I have given several invited talks at international conferences, universities, research centers and industrial sites:

MCE 2015 Meeting, Giessen, Germany, July 2015
ACS Meeting, Boston, USA, August 2015
University of Lille, France, January 2016
Sapporo, Japan, Plenary lecture, Rare Earth 2016, June 2016
Peking University, China, Key note lecture, 2ndFACC, July 2016
Bressanone, Italy, Key note lecture, Italian Conference on Catalysis, September 2016
Paul Scherrer Institute, Switzerland, Catalysis Seminar, September 2016
ETH, Zurich, Switzerland, September 2016
IRCE Lyon, France, November 2016
TU Wien, Austria, April 2017
Umicore, Hanau, May 2017
TU Delft, The Netherland, November 2017
Dechema, Frankfurt, Key note lecture, 27th ATC Industrial Inorganic Chemistry, February 2018
Treibacher Industrie AG, Althofen, June 2019
Albarella (RO), Partial PGMS summer school, June 2019
ACS Meeting, San Diego, USA, August 2019
PhD school in Catalysis and Catalytic Reaction Engineering: in memory of Professor Pio Forzatti
Ischia, July 2022
National Congress of the Division of Industrial Chemistry of the Italian Chemical Society, Catania
November 2022.

Representative papers in the last ten years:

Divins, N.J., Braga, A., Vendrell, X., Serrano, I., Garcia, X., Soler, L., Lucentini, I., Danielis, M., Mussio, A., Colussi, S., Villar- Garcia, I.J., Escudero, C., Trovarelli, A., Llorca, J. Investigation of the evolution of Pd-Pt supported on ceria for dry and wet methane oxidation (2022) **Nature communications**, 13 (1), p. 5080.

Toso, A., Danielis, M., De Leitenburg, C., Boaro, M., Trovarelli, A., Colussi, S. Key Properties and Parameters of Pd/CeO₂ Passive NO_x Adsorbers (2022) **Industrial and Engineering Chemistry Research**, 61 (9), pp. 3329-3341.

Danielis, M., Colussi, S., Llorca, J., Dolan, R.H., Cavataio, G., Trovarelli, A. Pd/CeO₂ catalysts prepared by solvent-free mechanochemical route for methane abatement in natural gas fueled vehicles (2021) **Industrial and Engineering Chemistry Research**, 60 (18), pp. 6435-6445.

Danielis, M., Betancourt, L.E., Orozco, I., Divins, N.J., Llorca, J., Rodríguez, J.A., Senanayake, S.D., Colussi, S., Trovarelli, A. Methane oxidation activity and nanoscale characterization of Pd/CeO₂ catalysts prepared by dry milling Pd acetate and ceria (2021) **Applied Catalysis B: Environmental**, 282, art. no. 119567.

Colussi, S., Fornasiero, P., Trovarelli, A. Structure-activity relationship in Pd/CeO₂ methane oxidation catalysts (2020) **Chinese Journal of Catalysis**, 41 (6), pp. 938-950.

Aneggi, E., Llorca, J., Trovarelli, A., Aouine, M., Vernoux, P. In situ environmental HRTEM discloses low temperature carbon soot oxidation by ceria-zirconia at the nanoscale (2019) **Chemical Communications**, 55 (27), pp. 3876-3878.

Danielis, M., Colussi, S., de Leitenburg, C., Soler, L., Llorca, J., Trovarelli, A. Outstanding Methane Oxidation Performance of Palladium-Embedded Ceria Catalysts Prepared by a One-Step Dry Ball-Milling Method (2018) **Angewandte Chemie - International Edition**, 57 (32), pp. 10212-10216.

Toso, A., Colussi, S., Padigapaty, S., de Leitenburg, C., Trovarelli, A. High stability and activity of solution combustion synthesized Pd-based catalysts for methane combustion in presence of water (2018) **Applied Catalysis B: Environmental**, 230, pp. 237-245.

Trovarelli, A., Llorca, J. Ceria Catalysts at Nanoscale: How Do Crystal Shapes Shape Catalysis? (2017) **ACS Catalysis**, 7 (7), pp. 4716-4735.

Yang, C., Yu, X., Heißler, S., Nefedov, A., Colussi, S., Llorca, J., Trovarelli, A., Wang, Y., Wöll, C. Surface Faceting and Reconstruction of Ceria Nanoparticles (2017) **Angewandte Chemie - International Edition**, 56 (1), pp. 375-379.

Gallert, T., Casanova, M., Puzzo, F., Strazzolini, P., Trovarelli, A. SO₂ resistant soot oxidation catalysts based on orthovanadates (2017) **Catalysis Communications**, 97, pp. 120-124.

Rico-Pérez, V., Aneggi, E., Bueno-López, A., Trovarelli, A. Synergic effect of Cu/Ce_{0.5}Pr_{0.5}O_{2-δ} and Ce_{0.5}Pr_{0.5}O_{2-δ} in soot combustion (2016) **Applied Catalysis B: Environmental**, 197, pp. 95-104.

Aneggi, E., Rico-Perez, V., De Leitenburg, C., Maschio, S., Soler, L., Llorca, J., Trovarelli, A. Ceria-Zirconia Particles Wrapped in a 2D Carbon Envelope: Improved Low-Temperature Oxygen Transfer and Oxidation Activity (2015) **Angewandte Chemie - International Edition**, 54 (47), pp. 14040-14043.

Casanova, M., Llorca, J., Sagar, A., Schermanz, K., Trovarelli, A. Mixed iron-erbium vanadate NH₃-SCR catalysts (2015) **Catalysis Today**, 241, pp. 159-168.

Casanova, M., Nodari, L., Sagar, A., Schermanz, K., Trovarelli, A. Preparation, Characterization and NH₃-SCR activity of FeVO₄ supported on TiO₂-WO₃-SiO₂ (2015) **Applied Catalysis B: Environmental**, 176-177 (1), pp. 699-708.

Vilé, G., Colussi, S., Krumeich, F., Trovarelli, A., Pérez-Ramírez, J. Opposite face sensitivity of CeO₂ in hydrogenation and oxidation catalysis (2014) **Angewandte Chemie - International Edition**, 53 (45), pp. 12069-12072.

Aneggi, E., Wiater, D., De Leitenburg, C., Llorca, J., Trovarelli, A. Shape-dependent activity of ceria in soot combustion (2014) **ACS Catalysis**, 4 (1), pp. 172-181.

Annex 1. List of publications

201. Aneggi, E., Campagnolo, F., Segato, J., Zuccaccia, D., Baratta, W., Llorca, J., Trovarelli, A.
Solvent-free Selective Oxidation of Benzyl Alcohol using Ru Loaded ceria-zirconia Catalysts
(2022) submitted.
200. Toso, A., Felli, A., Colussi, S., Boaro, M., Llorca, J., Truscott, B., Artner-Wellner, C., Trovarelli, A.
Enhanced CO Oxidation Activity on Perovskite Derived Needle-like MnOx/LaMnO3 Catalysts
(2022) submitted.
199. Danielis, M., Divins, N. J., Llorca, J., Soler, L., Garcia, X., Serrano, I., Betancourt, L.E., Xu, W., Rodriguez, J.A., Senanayake, S. D., Colussi, S., Trovarelli, A.
In Situ Investigation of the Mechanochemically Promoted Pd-Ce Interaction under Stoichiometric Methane Oxidation Conditions
(2022) *EES Catalysis*, in press.
198. Jimenez, J. D., J.D., Betancourt, L.E., Danielis, M., Zhang, H., Zhang, F., Orozco, I., Xu, W., Llorca, J., Liu, P., Trovarelli, A., Rodriguez, J.A., Colussi, S., Senanayake, S.D.
Identification of Highly Selective Surface Pathways for Methane Dry Reforming Using Mechanochemical Synthesis of Pd-CeO2
(2022) *ACS Catalysis*, 12 (20), pp. 12809-12822.
197. Divins, N.J., Braga, A., Vendrell, X., Serrano, I., Garcia, X., Soler, L., Lucentini, I., Danielis, M., Mussio, A., Colussi, S., Villar- Garcia, I.J., Escudero, C., Trovarelli, A., Llorca, J.
Investigation of the evolution of Pd-Pt supported on ceria for dry and wet methane oxidation
(2022) *Nature communications*, 13 (1), p. 5080.
196. Felli, A., Mauri, S., Marelli, M., Torelli, P., Trovarelli, A., Boaro, M.
Insights into the Redox Behavior of Pr0.5Ba0.5MnO3-δ-Derived Perovskites for CO2 Valorization Technologies
(2022) *ACS Applied Energy Materials*, 5 (6), pp. 6687-6699.
195. Toso, A., Danielis, M., De Leitenburg, C., Boaro, M., Trovarelli, A., Colussi, S. **Key Properties and Parameters of Pd/CeO2 Passive NOx Adsorbers** (2022) *Industrial and Engineering Chemistry Research*, 61 (9), pp. 3329-3341.
194. Hussain, S., Aneggi, E., Trovarelli, A., Goi, D.
Removal of Organics from Landfill Leachate by Heterogeneous Fenton-like Oxidation over Copper-Based Catalyst
(2022) *Catalysts*, 12 (3), art. no. 338.
193. Hussain, S., Aneggi, E., Comuzzi, C., Baderna, D., Zuccaccia, D., Trovarelli, A., Goi, D.
Abatement of the ecotoxicological risk of landfill leachate by heterogeneous Fenton-like oxidation
(2022) *Environmental Science and Pollution Research*.
192. Hussain, S., Aneggi, E., Trovarelli, A., Goi, D.
Heterogeneous Fenton-like oxidation of ibuprofen over zirconia-supported iron and copper catalysts: effect of process variables
(2021) *Journal of Water Process Engineering*, 44, art. no. 102343
191. Hussain, S., Aneggi, E., Goi, D., Trovarelli, A.
Bimetallic Cu/Fe catalysts for ibuprofen mineralization
(2021) *Catalysts*, 11 (11), art. no. 1383, .
190. Mussio, A., Danielis, M., Divins, N.J., Llorca, J., Colussi, S., Trovarelli, A.
Structural Evolution of Bimetallic PtPd/CeO2 Methane Oxidation Catalysts Prepared by Dry Milling
(2021) *ACS Applied Materials and Interfaces*, 13 (27), pp. 31614-31623.
189. Danielis, M., Colussi, S., Llorca, J., Dolan, R.H., Cavataio, G., Trovarelli, A.
Pd/CeO2 catalysts prepared by solvent-free mechanochemical route for methane abatement in natural gas fueled vehicles
(2021) *Industrial and Engineering Chemistry Research*, 60 (18), pp. 6435-6445.
188. Danielis, M., Betancourt, L.E., Orozco, I., Divins, N.J., Llorca, J., Rodriguez, J.A., Senanayake, S.D., Colussi, S., Trovarelli, A.
Methane oxidation activity and nanoscale characterization of Pd/CeO2 catalysts prepared by dry milling Pd acetate and ceria
(2021) *Applied Catalysis B: Environmental*, 282, art. no. 119567.
187. Felli, A., Trovarelli, A., Boaro, M.
Investigation of the redox behavior of double perovskite PrBaMn2O5+δ
(2021) *ECS Transactions*, 103 (1), pp. 1479-1489.
186. Boaro, M., Mortalo, C., Rebollo, E., Zin, V., Aneggi, E., Fabrizio, M., Trovarelli, A.

- Insights on the interfacial processes involved in the mechanical and redox stability of the BaCe_{0.65}Zr_{0.20}Y_{0.15}O_{3-δ}-Ce_{0.85}Gd_{0.15}O_{2-δ} composite**
(2020) *ACS Applied Energy Materials*, 3 (10), pp. 9877-9888.
185. Aneggi, E., Trovarelli, A.
Potential of ceria-zirconia-based materials in carbon soot oxidation for gasoline particulate filters
(2020) *Catalysts*, 10 (7), art. no. 768, pp. 1-13.
184. Colussi, S., Fornasiero, P., Trovarelli, A.
Structure-activity relationship in Pd/CeO₂ methane oxidation catalysts
(2020) *Chinese Journal of Catalysis*, 41 (6), pp. 938-950.
183. Aneggi, E., de Leitenburg, C., Trovarelli, A.
Influence of nanoscale surface arrangements on the oxygen transfer ability of ceria-zirconia mixed oxide
(2020) *Inorganics*, 8 (5), art. no. 34.
182. Aneggi, E., de Leitenburg, C., Boaro, M., Fornasiero, P., Trovarelli, A.
Cerium Oxide (CeO₂): Synthesis, Properties and Applications in S. Scirè and L. Palmisano, Editors
(2020) *Catalytic applications of cerium dioxide*, Elsevier 45-108.
181. Melchionna, M., Trovarelli, A., Fornasiero, P.
Synthesis and properties of cerium oxide-based materials In S. Scirè and L. Palmisano, Editors
(2020) *Catalytic applications of cerium dioxide*, Elsevier 13-43.
180. Hussain, S., Aneggi, E., Briguglio, S., Mattiussi, M., Gelao, V., Cabras, I., Zorzenon, L., Trovarelli, A., Goi, D.
Enhanced ibuprofen removal by heterogeneous-Fenton process over Cu/ZrO₂ and Fe/ZrO₂ catalysts (2020) *Journal of Environmental Chemical Engineering*, 8 (1), art. no. 103586.
179. Danielis, M., Colussi, S., de Leitenburg, C., Trovarelli, A.
The role of palladium salt precursors in Pd-PdO/CeO₂ catalysts prepared by dry milling for methane oxidation
(2020) *Catalysis Communications*, 135, art. no. 105899.
178. Toso, A., Colussi, S., Llorca, J., Trovarelli, A.
The dynamics of PdO-Pd phase transformation in the presence of water over Si-doped Pd/CeO₂ methane oxidation catalysts
(2019) *Applied Catalysis A: General*, 574, pp. 79-86.
177. Boaro, M., Colussi, S., Trovarelli, A.
Ceria-based materials in hydrogenation and reforming reactions for CO₂ valorization
(2019) *Frontiers in Chemistry*, 7, art. no. 28.
176. Maiti, S., Das, D., Pal, K., Llorca, J., Soler, L., Colussi, S., Trovarelli, A., Priolkar, K.R., Sarode, P.R., Asakura, K., Seikh, M.M., Gayen, A.
Methanol steam reforming behavior of sol-gel synthesized nanodimensional Cu_xFe_{1-x}Al₂O₄ hercynites
(2019) *Applied Catalysis A: General*, 570, pp. 73-83.
175. Danielis, M., Colussi, S., De Leitenburg, C., Soler, L., Llorca, J., Trovarelli, A.
The effect of milling parameters on the mechanochemical synthesis of Pd-CeO₂ methane oxidation catalysts
(2019) *Catalysis Science and Technology*, 9 (16), pp. 4232-4238.
174. Aneggi, E., Llorca, J., Trovarelli, A., Aouine, M., Vernoux, P.
In situ environmental HRTEM discloses low temperature carbon soot oxidation by ceria-zirconia at the nanoscale
(2019) *Chemical Communications*, 55 (27), pp. 3876-3878.
173. Toso, A., Colussi, S., Padigapaty, S., de Leitenburg, C., Trovarelli, A.
High stability and activity of solution combustion synthesized Pd-based catalysts for methane combustion in presence of water
(2018) *Applied Catalysis B: Environmental*, 230, pp. 237-245.
172. Danielis, M., Colussi, S., de Leitenburg, C., Soler, L., Llorca, J., Trovarelli, A.
Outstanding Methane Oxidation Performance of Palladium-Embedded Ceria Catalysts Prepared by a One-Step Dry Ball-Milling Method
(2018) *Angewandte Chemie - International Edition*, 57 (32), pp. 10212-10216.
171. Pappacena, A., Razaq, R., de Leitenburg, C., Boaro, M., Trovarelli, A.
The role of neodymium in the optimization of a Ni/CeO₂ and Ni/CeZrO₂ Methane dry reforming catalyst
(2018) *Inorganics*, 6 (2), art. no. 39.
170. Scharfe, M., Capdevila-Cortada, M., Kondratenko, V.A., Kondratenko, E.V., Colussi, S., Trovarelli, A., López, N., Pérez-Ramírez, J.
Mechanism of Ethylene Oxychlorination on Ceria
(2018) *ACS Catalysis*, 8 (4), pp. 2651-2663.
169. Casanova, M., Colussi, S., Trovarelli, A.
Investigation of iron vanadates for simultaneous carbon soot abatement and NH₃-SCR

(2018) *Catalysts*, 8 (4), art. no. 130.

168. Meunier, F., Maffre, M., Schuurman, Y., Colussi, S., Trovarelli, A.

Acetylene semi-hydrogenation over Pd-Zn/CeO₂: Relevance of CO adsorption and methanation as descriptors of selectivity

(2018) *Catalysis Communications*, 105, pp. 52-55.

167. Del Zotto, A., Colussi, S., Trovarelli, A.

Pd/REOs catalysts applied to the Suzuki-Miyaura coupling. A comparison of their catalytic performance and reusability

(2018) *Inorganica Chimica Acta*, 470, pp. 275-283.

166. Das, D., Pal, K., Llorca, J., Dominguez, M., Colussi, S., Trovarelli, A., Gayen, A.

Chemoselective hydrogenation of cinnamaldehyde at atmospheric pressure over combustion synthesized Pd catalysts

(2017) *Reaction Kinetics, Mechanisms and Catalysis*, 122 (1), pp. 135-153.

165. Pappacena, A., Rancan, M., Armelao, L., Llorca, J., Ge, W., Ye, B., Lucotti, A., Trovarelli, A., Boaro, M.

New Insights into the Dynamics That Control the Activity of Ceria-Zirconia Solid Solutions in Thermochemical Water Splitting Cycles

(2017) *Journal of Physical Chemistry C*, 121 (33), pp. 17746-17755.

164. Trovarelli, A., Llorca, J.

Ceria Catalysts at Nanoscale: How Do Crystal Shapes Shape Catalysis?

(2017) *ACS Catalysis*, 7 (7), pp. 4716-4735.

163. Castoldi, L., Aneggi, E., Matarrese, R., Bonzi, R., Trovarelli, A., Lietti, L.

Simultaneous Removal of Soot and NO_x Over Silver and Ruthenium-Based Catalysts

(2017) *Topics in Catalysis*, 60 (3-5), pp. 209-213.

162. Aneggi, E., Trovarelli, A., Goi, D.

Degradation of phenol in wastewaters via heterogeneous Fenton-like Ag/CeO₂ catalyst

(2017) *Journal of Environmental Chemical Engineering*, 5 (1), pp. 1159-1165.

161. Rico-Pérez, V., Aneggi, E., Trovarelli, A.

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Annex 2. List of patents

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