

Isabella Nova

CURRICULUM VITAE

PERSONAL INFORMATION



Name Isabella Nova
Date of birth 23/08/70
Nationality Italian
Marital status married since 1998, with two children born in 2001 and 2007
Research ID <http://www.researcherid.com/rid/I-2395-2015>
Scopus ID <https://www.scopus.com/authid/detail.uri?authorId=7004116228>
Google Scholar ID <https://scholar.google.it/citations?user=HnvHQ-UAAAAJ&hl=it>

EDUCATION and WORK EXPERIENCE

2018-present: Full Professor, Laboratory of Catalysis and Catalytic Processes (LCCP), Department of Energy, Politecnico di Milano, Milano, Italy

2012-National Abilitation for full professorship

2008-Associate Professor, Laboratory of Catalysis and Catalytic Processes (LCCP), Department of Energy, Politecnico di Milano, Milano, Italy

2007-2008: Associate Professor, Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy

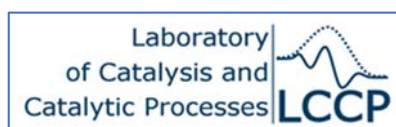
2002-2007: Assistant Professor, Department of Chemistry, Materials and Chemical Engineering, Politecnico di Milano, Italy

1999-2002: Post Doc Position, Chemical Engineering, Politecnico di Milano, Italy. Supervisor: prof. Forzatti

1999: P.h.D., Industrial Chemistry, Università degli Studi di Milano, Italy. Supervisor: prof. Forzatti

1996: Master Degree, Chemical Engineering, Politecnico di Milano, Italy. Supervisor: prof. Forzatti

Currently responsible for the photocatalytic research lines, and co-responsible for Selective Catalytic Reduction deNO_x activities at Laboratory of Catalysis and Catalytic Processes, Politecnico di Milano, Italy



TEACHING ACTIVITIES

2007-present: "Catalytic Processes for Energy and Environment" (n° students 40-60, 5 CFU), at the Master level of Chemical Engineering Program at Politecnico di Milano (High Evaluation grades).

2003-present: "Processes for energy and environment" (n° students 50-100, 10 CFU) at the Master level of the Chemical Engineering and Environmental Engineering Programs at Politecnico di Milano (High Evaluation grades).

1999-2006: assistant of several courses for Bachelor and Master level of the Chemical Engineering Program at Politecnico di Milano, including Industrial Chemistry, Industrial Catalysis, Instrumentation and Measurements.

Several industrial and academic courses, including for PhD students, covering applied catalysis, fundamental catalysis, industrial chemistry, chemical reaction engineering.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

Supervisor of more than 70 Bachelor students, more than 90 Master students, 10 PhD's students, 5 Post Doc researchers.

Former PhD students have been employed in R&D Centers of Italian Institute of Technology, Umicore, Johnson Matthey, Chemtex, Brembo.

MAJOR INSTITUTIONAL RESPONSIBILITIES

2019-present: Vice Dean of the School of Industrial and Information Engineering at Politecnico di Milano

2018-present: President of the Degree Program Board of Chemical Engineering (Bachelor and Master) and of Engineering for Prevention and Safety for Process Industry (Master) at Politecnico di Milano

2014-2017: Secretary of the Degree Program Board of Chemical Engineering (Bachelor and Master) and of Engineering for Prevention and Safety for Process Industry (Master) at Politecnico di Milano

2013-2017: President of the Graduation Committee of Chemical Engineering (Bachelor and Master) and of Engineering for Prevention and Safety for Process Industry (Master) at Politecnico di Milano

2012-present: Member of the Scientific Board of the PhD program in "Industrial Chemistry and Chemical Engineer" at Politecnico di Milano

2011-present: Responsible for Bachelor Thesis projects of Chemical Engineering Program at Politecnico di Milano

2011-2015: Elected member of the Directive Board of the Industrial Chemistry Division, Italian Chemical Society

2004-2007: Elected member of the Directive Board of the Department of Chemistry, Materials and Chemical Engineering, Politecnico of Milano

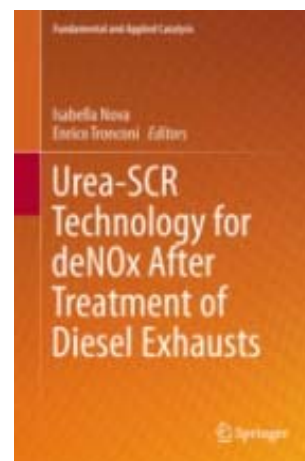
COMMISSIONS OF TRUST

2019, 2016, 2014, 2012, 2010, 2008: Guest Editor of special issues of *Catalysis Today* (Vol., 320, 267, 231, 184, 151, 136), Elsevier

2016-present: Editorial Board of "*Applied Catalysis B: Environmental*" (Elsevier), catalysis journal with the highest IF (2017: 11.698)

2016-present: Editorial Board of "*ChemEngineering*" (MPDI).

2014: Co-editor of “Urea-SCR Technology for deNO_x After Treatment of Diesel Exhaust”, Springer Science+Business Media New York, 2014 (Springer). A reference in the field, with over 68.000 downloads of the different chapters.



Regularly acting as expert reviewer for the Provincia Autonoma di Trento (Italy), The Skolkovo Foundation (Russia), Technology Foundation STW (The Netherlands), for many leading international journals in the field of catalysis and chemical engineering (e.g. Journal of Catalysis, Applied Catalysis A & B, ACS Catalysis, Chemical Engineering Journal, AIChE Journal, Industrial Engineering Chemical Research) \approx 20/year, and for the related main conferences (NAM, ISCRE, EUROPCAT, ICEC, ICC, CAPOC, ...).

Principal Opponent in several occasions for the evaluation of PhD theses (at Chalmers University, Sweden, Politecnico di Torino and Università Federico II di Napoli, Italy, Universidad Pais Basco, Spain, University of Alberta, Canada).

Member of several commissions for the selection of Research fellows (Assegni di Ricerca) at Politecnico di Milano and of an Assistant Professor at Politecnico di Milano and Politecnico di Torino

Member of the commission for the professional qualification of Industrial Engineering (Esame di Stato) at Politecnico di Milano

ORGANISATION OF SCIENTIFIC MEETINGS

2018: Member of the Scientific Committee of the 10th International Conference on Environmental Catalysis & 3rd International Symposium on Catalytic Science and Technology in Sustainable Energy and Environment (ICEC&EECAT2018), Tianjin (China), September 23-27, 2018 (over 1000 expected attendees)

2014: Member of the Scientific Committee of the 10th European Symposium on Electrochemical Engineering, Chia, Domus de Maria (CA), Sardinia, Italy, September 28 - October 02, 2014 (\approx 200 attendees)

2013: Member of the Scientific Committee of the XVII National Congress on Catalysis and of the XI National Congress on Science and Technology of Zeolites, Riccione, Italy, September 15-18, 2013 (\approx 200 attendees)

2012: Member of the International Program Committee, ECOSM'12 (Engine Control, Simulation and Modeling), France, October 23-25, 2012 (\approx 150 attendees)

2012: Member of the Organizing Committee of the Workshop “Catalisi per Energia e Ambiente”, Politecnico di Milano, Milano, Italy, November 16, 2012 (\approx 80 attendees)

2009: Member of the International Program Committee, ECOSM'09 (Engine Control, Simulation and Modeling), France, 30 November - 2 December, 2009 (\approx 150 attendees)

SELECTED INVITED LECTURES

- 2019: invited Lecture "Cu-cha catalysts for NH₃-SCR: the roles of SiO₂/Al₂O₃ and Cu loading in the Cu-speciation", Zhejiang University, Hangzhou, China
- 2018: invited Lecture "NH₃-SCR for lean exhausts after-treatment: from fundamental understanding to practical applications", Zhejiang University, Hangzhou, China
- 2018: invited Key-note Lecture at the 10th International Conference on Environmental Catalysis & 3rd International Symposium on Catalytic Science and Technology in Sustainable Energy and Environment (ICEC&EECAT2018), Tianjin, China, September 22-26th, 2018
- 2017: invited Key-note Lecture at the 18th National Congress on Catalysis of China, Tianjin, China, October 16-20, 2017
- 2016: invited Key-note lecture at the 2nd International Symposium on Catalytic Science and Technology in Sustainable Energy and Environment, EECAT2, Tianjin, China, October 12-14, 2016
- 2016: invited Lecture "Recent advances in fundamental understanding of the mechanisms of NH₃-SCR reactions for Diesel exhausts after-treatment" at Tsinghua University, Beijing, China
- 2015 Key-note Lecture at the 24th North American Meeting (NAM) of the North American Catalysis Society, Pittsburgh, Pennsylvania, USA, 14 June - 19 June 2015
- 2014: invited Key-note Lecture at the 1st International Symposium on Catalytic Science and Technology in Sustainable Energy and Environment, EECAT, Tianjin, China, October 8-10, 2014
- 2013: invited Key-note Lecture at XI European Congress on Catalysis "EuropacatXI" in Lyon, September 1-6, 2013
- 2012: invited plenary Lecture at 2012 DOE CLEERS workshop, Dearborn, MI, April 30 - May 2, 2012
- 2011: invited lecture "Kinetic Modeling of Hysteresis Effects in Low-T NH₃-SCR over Fe-zeolite Catalysts" at Corning Research Center, Sullivan Park, NY, USA
- 2011: invited Plenary Lecture per MODEGAT II, International Symposium on Modelling of Exhaust-Gas After-Treatment, 19-20 September 2011, Bad Herrenalb/Karlsruhe, Germany
- 2010: invited lecture "Mechanistic aspects of the reduction of NO_x stored over Pt-Ba/Al₂O₃ Lean NO_x Trap catalysts" at Corning Research Center, Sullivan Park, NY, USA
- 2009: invited lecture "Diesel NO_x aftertreatment catalytic technologies: Analogies in LNT and SCR catalytic chemistry" at Corning Research Center, Sullivan Park, NY, USA
- 2009: invited Key-note Lecture at the 21st North American Meeting (NAM) of the North American Catalysis Society (San Francisco, CA, USA, June 2009)
- 2008: invited lecture "Mechanistic aspects of the reduction of NO_x stored over Pt-Ba/Al₂O₃ Lean NO_x Trap catalysts" at Institut fuer Technische Chemie und Polymerchemie, Karlsruhe University (Germany)
- 2007: invited lecture "NO/NO₂-NH₃ SCR reactions over commercial catalysts for Diesel exhausts after treatment" at Corning C.E.T.C., Fontainebleau, FR
- 2007: invited web conference "Transient kinetic features of the NO/NO₂-NH₃ SCR reactions for Diesel exhaust after treatment" for the group of the Cross-Cut Lean Exhaust Emissions Reduction Simulations

2005: invited lecture “NO_x storage mechanism over Pt-Ba/Al₂O₃ Lean NO_x Trap catalysts” at the PNNL, Pacific Northwest National Laboratory, Richland Washington State, USA

2005: invited Key-note Lecture at the American Chemical Society’s Fuel Chemistry and Petroleum Chemistry Divisions entitled “CATALYSIS IN FUEL CHEMISTRY” during the 229th ACS National Meeting (San Diego, California, March 13-17, 2005)

AWARDS and RECOGNITIONS

2018: inclusion in the Inspiring Fifty, Italy (<https://italy.inspiringfifty.org/>)

2016: inclusion in the Top Italian Women Scientists (www.100esperte.it)

2013: inclusion in the Top Italian Scientists (Via-academy. www.topitalianscientists.org)

2010: Best Poster Award at 6th International Conference on Environmental Catalysis (ICEC 2010), September 2010, Beijing, China

2009: “Energy award” by Schneider Electric for the patent “APPARATUS AND PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN EXHAUST GASES OF COMBUSTION SYSTEMS”

2009: “K-idea award” by Kilometro Rosso for the patent “APPARATUS AND PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN EXHAUST GASES OF COMBUSTION SYSTEMS”

2005: “Glenn Award for the San Diego Meeting of the Fuel Chemistry Division”, ACS Meeting, March 2005

2004: “Prize for young scientists”, 13^o International Congress on Catalysis, Paris, France, July 2004

2000: “Giovani Ricercatori 2000”, by Politecnico di Milano

MAJOR NATIONAL and INTERNATIONAL SCIENTIFIC and ACADEMIC COLLABORATIONS

Prof. D.Chen - Norwegian University of Science and Technology, Norway: in 2018, a post doc student from LCCP spent some time at NTU to study SCR mechanisms by UV-Vis-NIR operando spectroscopy - 1 joint paper submitted



Prof. X.Gao - Zhejiang University, China: in 2013 I was asked to host a post doc student, who worked at LCCP in 2015-16 studying SCR catalysis, and in 2016-17 a PhD student spent 1 year at LCCP - 1 joint paper published, 1 joint paper submitted, 2 in preparation



Prof. J.D.Grunwaldt - Karlsruher Institut für Technologie, GE: in 2015 a visiting student from LCCP performed operando spatially and time-resolved XAS measurements of the SCR reactions - 1 joint paper in press



Prof. W.S.Epling – Univ. of Virginia, USA: in 2014 a LCCP visiting student performed under my supervision mechanistic studies of undesired NH₃ oxidation reaction over Cu-CHA catalysts – 1 joint paper published



Dr. W.Partridge, dr. T.Toops, dr. J.Phil – Oak Ridge National Laboratory, Knoxville, USA: since 2012 different visiting students from LCCP performed at ORNL mechanistic studies of NH₃-SCR reactions over Cu-CHA catalysts – 2 joint papers published



Dr. Z.Sobalik – Academy of Sciences, Prague, CZ: since 2012 visiting students from LCCP performed DRIFTS studies of NH₃-SCR reactions over Cu/Fe-zeolites catalysts - 1 joint paper published, 1 in press



Prof. Li Bassi - Politecnico di Milano, I: the collaboration started in 2011 focusing on preparation, characterization and testing of nanostructured tree-like TiO₂ based catalysts for production of hydrogen by photocatalytic processes - 4 joint papers published

Prof. G. Koltsakis - Aristotle University of Thessaloniki, GR: in 2011 a PhD student from LCCP spent a 6-month period at LAT performing modelling activities of NH₃-SCR systems– 3 joint papers published



Prof. S.Palmas - Università di Cagliari, I: in 2010 a collaboration started, focusing on preparation, characterization and testing of nanostructured TiO₂ based catalysts for production of hydrogen by photocatalytic processes - 4 joint papers published

Dr. C.H.F.Peden - Office of Science, U.S. Department of Energy, USA, dr. J.Sznayi - Pacific Northwest National Laboratory, USA, dr. A.Yezerets - Cummins Inc., USA, Prof. W.Epling - University of Virginia, USA: since 2007 I worked with them in the organization of the North American Catalysis Society Meeting sessions dedicated to Emission Control Catalysis and in the preparation of the related special issues of Catal.Today

Prof. G.Ghiotti - Università di Torino, I: since 1999 we worked together complementing FTIR analyses with transient response techniques for the mechanistic studies of LNT catalysts - 11 joint papers published

RESEARCH FUNDINGS

I am currently PI and/or co-PI of research projects funded by Daimler AG (DE), MTU (DE), FPT (I), Johnson Matthey (UK), Cummins (US) and Politecnico di Milano (over 800,000 Euros funding), and I am participating to an EU-H2020 project (170,000 Euros funding).

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>
THOMSON - Mild Hybrid cOst effective solutions for a fast Market penetratiON	EU-H2020	170,000 (total budget 11.7 MI)	2016-2019
Experimental and modelling analysis of Cu-zeolite NH ₃ -SCR catalysts and of Passive NOx Adsorber systems	Johnson Matthey PLC, UK	140,000	2017-2019
“Experimental evaluation of Cu speciation over SCR catalysts”	Cummins, US	30,000	2019
Experimental study of NOx storage/release/reduction on mixed SCR- NOx Adsorber (AdSCR)	Daimler AG, DE	30,000	2019

systems.			
Experimental study of the effect of oxygen concentration changes on the SCR reaction dynamics	Daimler AG, DE	14,000	2019
Development and calibration of a model for a dual-layer Ammonia Slip catalyst	FPT Industrial S.p.A., I	200,000	2019
Experimental and modelling study of the interactions between ash and SCR reactions in SCRF	FPT Industrial S.p.A., I	200,000	2019

Since 2002 I have been leading and/or co-leading industrial projects (overall funding over to 2,5MI Euros) with

Daimler AG, DE: the collaboration (started in 2001) is focused on the analysis of catalytic chemistry, transient kinetics, model development and converter design of SCR, ASC, and SDPF systems. I have directly contributed to the development of the BlueTec® technology, now commercialized on Euro 4, 5 and 6 Mercedes-Benz passenger cars and heavy-duty vehicles



Corning Inc., USA: the collaboration (2006–2012) was focused on the analysis of the effect of the substrate properties of monolithic SCR catalysts



Haldor Topsoe A/S, DK: the collaboration (2010-2011) was focused on the effect of Ammonium Nitrate promotion of the SCR-DeNOx activity, a concept I patented in 2009. The work led to a new patent, filed in 2014



MTU, DE: the collaboration (started in 2011) is focused on SDPF systems for the combined NOx and soot removal, on Ammonia Slip Catalysts modelling, on ageing phenomena of Vanadium and Fe-zeolite catalysts



Politecnico di Milano: FARB project “Nano engineered catalytic materials for hydrogen production via photocatalytic water splitting process” (2011-2012 and 2015-2016)

Johnson Matthey PLC, UK: the collaboration (started in 2013) is focused on the analysis of the effect of different zeolite structures (CHA, BETA, ZSM-5, SAPO-34) on the performances of Cu-based SCR catalysts, and on new PNA systems for NOx trapping during cold start periods



Cummins Inc., USA: the collaboration (2015) was focused on the development of a new procedure for the experimental evaluation of ammonium nitrate storage on NH₃-SCR catalysts



FPT Industrial S.p.A., Italy: the collaboration (started in 2017) is focused on a comprehensive analysis of SCR, SDPF, and ASC catalysts and on



the development of related kinetic models. Also, the study of ammonia emissions from NG vehicles is being addressed

CORE - CO₂ Reduction for long distance transport EU-FP7 project (2012-2015): the focus of LCCP was on the effect of Ammonium Nitrate promotion of the SCR-DeNOx activity at low T



HDGAS - Heavy Duty Gas Engines integrated into Vehicles EU-H2020 project (2015-2018): the focus of LCCP was the study of the effect of methane on the SCR performances, and of effect of Ammonium Nitrate promotion of the SCR-DeNOx activity at low T



EXPLOITATION

The scientific collaboration with Daimler, testified by many joint publications, helped in developing the new technology **BLUETEC**[®] for the control of NOx from Diesel engines, commercialized by Mercedes Benz since 2005.



The patent "APPARATUS AND PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN EXHAUST GASES OF COMBUSTION SYSTEMS", WO2008126118 (A1) 23/10/2008) was noticed by Topsoe A/S that funded a specific research collaboration to explore the possibility of commercially exploiting the concept. The activity results lead to the deposition of a new joint patent and (Method and System for the Removal of Noxious Compounds from Engine Exhaust Gas", deposited 21 September 2012 n. PCT/EP2012/068621).

COMMUNICATION

Being part of *100 esperte group* (www.100esperte.it), I am a reference for media in relation to aspects of pollution, environment, and energy. I have been interviewed by Italian newspapers, such as *La Repubblica* (www.repubblica.it/) and *La Stampa* (www.lastampa.it/).

The *100 esperte group* is an online data bank with names of female experts in the STEM area (Science, Technology, Engineering and Mathematics), to against the fact that several research study on women in information shows that women are rarely questioned by the media as experts. The experts were selected by a scientific committee on the basis of their CV.

DISSEMINATION

My contribution to catalysis is exemplary and I am currently an internationally recognized leader specifically in the automotive catalysis area, covering catalyst modeling and mechanistic studies, reaction engineering, experimental work, controls development, and application. This is testified by co-authorship of over 130 papers, invention of 3 international patents, co-editing of 6 volumes of *Catal.Today* special issues and of 1 Springer book, co-authoring of more than 250 communications to conferences. I have given more than 20 invited talks at international universities, research centers, and industrial sites, and more than 10 keynote or plenary lectures

at international conferences.

Scientific journal metrics - July 2019:

WEB of SCIENCE	H-index: 43	Citation Index: 5421
SCOPUS	H-index: 45	Citation Index: 6729
Google Scholar	H-index: 53	Citation Index: 8989

- “NO_x Storage Reduction over Pt---Ba/Al₂O₃ Catalyst”, Journal of Catalysis, Volume 204, Issue 1, 15 November 2001, Pages 175-191 was present in the "Top-50 most cited articles" published by Elsevier in the period 2001-2005
- “NO_x adsorption study over Pt-Ba/alumina catalysts: FT-IR and pulse experiments”, Journal of Catalysis, Volume 222, Issue 2 (2004), Pages 377-388 was present in the "Top-50 most cited articles" published by Elsevier in the period 2004 -2008
- “Modelling of an SCR catalytic converter for diesel exhaust after treatment: Dynamic effects at low temperature”, Catalysis Today, Volume 105, Issue 3-4, 1 August 2005, Pages 529-536 was 9° among the 25 most downloaded articles from the Catalysis Today website in the period July - September 2005
- “NH₃-NO/NO₂ chemistry over V-based catalysts and its role in the mechanism of the Fast SCR reaction”, Catalysis Today, Volume 114, Issue 1, April 2006, Pages 3-12 was 22° among the 25 most downloaded articles from the Catalysis Today website in the period April to June 2006
- “Reactivity of NO/NO₂-NH₃ SCR system for diesel exhaust aftertreatment: Identification of the reaction network as a function of temperature and NO₂ feed content”, Applied Catalysis B: Environmental, Volume 70, Issues 1-4, January 2007, Pages 80-90 is one of the most cited articles published since 2007
- “Redox features in the catalytic mechanism of the standard and fast NH₃-SCR of NO over a V-based catalyst investigated by dynamic methods”, Journal of Catalysis, Volume 245, Issue 1, 1 January 2007, Pages 1-10 was 5° among the 25 most downloaded articles from the Journal of Catalysis website in the period October to December 2006
- “NH₃ SCR of NO_x for diesel exhausts aftertreatment: role of NO₂ in catalytic mechanism, unsteady kinetics and monolith converter modelling”, Chemical Engineering Science, Volume 62, Issue 18-20, September 2007, Pages 5001-5006 was 6° among the 25 most downloaded articles from the Chemical Engineering Science website in the period October to December 2007 and was 21° in the period January to March 2008
- “The chemistry of the NO/NO₂-NH₃ fast SCR reaction over Fe-ZSM5 investigated by transient reaction analysis”, Journal of Catalysis, Volume 256, Issue 2, 1 June 2008, Pages 312-322 was 25° among the Hottest 25 articles on the Journal of Catalysis website in the period April to June 2008 and is one of the most cited articles published since 2007
- “Study of a Fe-zeolite-based system as NH₃-SCR catalyst for diesel exhaust aftertreatment”, Catalysis Today, Volume 136, Issue 1-2, 1 July 2008, Pages 18-27, was 12° Hottest 25 articles on the Catalysis Today website in the period April to June 2008 and is one of the most cited articles published since 2007
- “Ammonia blocking of the "Fast SCR" reactivity over a commercial Fe-zeolite catalyst for Diesel exhaust aftertreatment”, Journal of Catalysis, Volume 265, Issue 2, 2009, Pages 141-147 was 12° Hottest 25 articles on the Journal of Catalysis website in the period July to September 2009

“Diesel NO_x aftertreatment catalytic technologies: Analogies in LNT and SCR catalytic chemistry”, *Catalysis Today*, Volume 151, Issue 3-4, 1 June 2010, Pages 202-211 was 22° among the 25 most downloaded articles from the *Catalysis Today* website in the period April to June 2010

“Enhanced NH₃ Selective Catalytic Reduction for NO_x Abatement”, *Angewandte Chemie*, 121(44) (2009) 8516-8518 and *Angewandte Chemie International Edition*, 48(44) (2009) 8366–8368, was indicated as VIP – Very Important Paper (5% Top Articles) by two of three reviewers and it was published on both the German and the international edition of *Angewandte Chemie*.

The patent “APPARATUS AND PROCESS FOR REDUCING THE CONTENT OF NITROGEN OXIDES IN EXHAUST GASES OF COMBUSTION SYSTEMS”, WO2008126118 (A1) 23/10/2008 was reviewed in *Netwon* and *ALP* journals.

PUBLICATION LIST

Papers

- P1. L. Lietti, I. Nova, S. Camurri, E. Tronconi and P. Forzatti, “Dynamics of SCR-DeNO_x reaction by the Transient-Response Method”, *AIChE Journal*, 43(10) (1997) 2559-2570, ISSN: 0001-1541, DOI: 10.1002/aic.690431017
- P2. I.Nova, L. Lietti, L. Casagrande, L. Dall’Acqua, E.Giamello and P. Forzatti, “Characterization and reactivity of TiO₂-supported MoO₃ De-Nox SCR catalysts”, *Applied Catalysis B: Environmental*, 17 (1998) 245-258, doi: 10.1016/S0926-3373(98)00015-0
- P3. L. Lietti, I. Nova, E. Tronconi, P. Forzatti, “Transient kinetic study of the SCR-DeNO_x reaction”, *Catalysis Today* 45 (1998) 85-92, ISSN: 0920-5861, doi: 10.1016/S0920-5861(98)00253-3
- P4. L. Casagrande, L. Lietti, I. Nova, P. Forzatti, A. Baiker “SCR of NO by NH₃ over TiO₂-supported V₂O₅–MoO₃ catalysts: reactivity and redox behavior”, *Applied Catalysis B: Environmental*, 22 (1999) 63-77, doi: 10.1016/S0926-3373(99)00035-1
- P5. L.Lietti, I.Nova, G.Ramis, L.Dall’Acqua, G.Busca, E.Giamello, P.Forzatti, F.Bregani, “Characterization and Reactivity of V₂O₅–MoO₃/TiO₂ De-NO_x SCR Catalysts”, *Journal of Catalysis*, 187 (1999) 419-435, ISSN: 0021-9517, doi: 10.1006/jcat.1999.2603
- P6. P.Forzatti, L.Lietti, I.Nova, E.Tronconi, “Transient kinetics in heterogeneous catalysis: application of the transient response methods to the study of the dynamics of the DeNO_x-SCR reaction”, in *Chemical Engineering Greetings to Prof. Mario Dente* (Eds. AIDIC, the Italian Association of Chemical Engineering, ERIS C.T. S.r.l., Milano, Italy) 1999, pp. 151-170; ISBN: 0391-7401
- P7. L. Lietti, I.Nova, P. Forzatti, “Selective Catalytic Reduction of NO by NH₃ over TiO₂-supported V₂O₅-MoO₃ catalysts”, in *AIDIC Conference Series*, vol.4, 33-40, (Sauro Pierucci Ed., ERIS C.T. S.r.l., Milano, Italy) 1999; ISBN: 0391-7401
- P8. L.Lietti, I.Nova, “Selective Catalytic Reduction of NO_x from stationary sources”, *Istituto Lombardo (Rend. SC.) B* 134 (2000) 135-157, pubblicato da Istituto Lombardo, Accademia di Scienze e Lettere, a Milano, Italy
- P9. P.Forzatti, I.Nova, A.Beretta, (V.Palma, P.Ciambelli, E.M.Slavinkaya, B.S.Bal’zhinimaev, R.Colafato, F.Bregani), “Catalytic properties in deNO_x and SO₂–SO₃ reactions”, *Catalysis Today*, 56 (2000) 431-441, ISSN: 0920-5861, doi: 10.1016/S0920-5861(99)00302-8

- P10. L.Lietti, I.Nova and P.Forzatti, "Selective catalytic reduction (SCR) of NO by NH₃ over TiO₂-supported V₂O₅-WO₃ and V₂O₅-MoO₃ catalysts ", *Topics in Catalysis*, 11/12 (2000) 111-122, ISSN: 1022-5528, doi: 10.1023/A:1027217612947
- P11. I.Nova, L.Lietti, E.Tronconi, P.Forzatti "Dynamics of SCR reaction over a TiO₂-supported vanadia-tungsta commercial catalyst", *Catalysis Today*, 60 (2000) 73-82, doi: 10.1016/S0920-5861(00)00319-9
- P12. L.Dall'Acqua, I.Nova, L.Lietti, G.Ramis, G.Busca, E.Giamello, "Spectroscopic characterisation of MoO₃/TiO₂ deNO_x-SCR catalysts: Redox and coordination properties", *Physical Chemistry Chemical Physics*, 2 (2000) 4991-4998, doi: 10.1039/b005007p
- P13. L.Lietti, I.Nova, E.Tronconi, P. Forzatti "Unsteady-state kinetics of DeNO_x-SCR catalysis" in *Reaction Engineering for Pollution Prevention* (M.A. Abraham and R.P.Hesketh Editors), 2000, pp. 85-112, ISBN: 0-444-50215-7, doi: 10.1016/B978-044450215-5/50081-0
- P14. I.Nova, L.Lietti, E.Tronconi, P.Forzatti, "Concentration programmed adsorption-desorption/surface reaction study of the SCR-DeNO_x reaction", *Studies in Surface Science and Catalysis* 130 (2000) 623-628 (A. Corma, F.V. Melo, S. Mendoriz, and J.L.G. Fierro Eds.), ISBN-13: 978-0-444-50480-7, ISBN-10: 0-444-50480-X, doi: 10.1016/S0167-2991(00)81027-7
- P15. I.Nova, L. Lietti, E. Tronconi, P. Forzatti, "Transient response method applied to the kinetic analysis of the DeNO_x-SCR reaction", *Chemical Engineering Science*, 56 (2001) 1229-1237, doi: 10.1016/S0009-2509(00)00344-4
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Milano, 25 luglio 2019

A handwritten signature in black ink, appearing to read "J. Forzatti", is centered on a light gray rectangular background.