Gian Luca Chiarello graduated in Industrial Chemistry at the University of Milano in 2004 and received his PhD in Industrial Chemistry from the same University in 2007, with two thesis in heterogeneous catalysis under the supervision of prof. Lucio Forni. The PhD Thesis was entitled "Metal Oxides: preparation by an Innovative Flame method and Catalytic Applications". In 2006 he spent part of his PhD work at the ETH Zürich in Prof. Alfons Baiker group. After the PhD he got three succeeding post doc positions: *i*) from 2008 to 2010 in photocatalysis at the University of Milano in the prof. Elena Selli group, *ii*) in 2011 in operando X-ray Absorption Spectroscopy (XAS) at the Karlsruher Institut für Technologie – KIT (Germany) in prof. Jan-Dierk Grunwaldt group, and *iii*) in 2012 at EMPA- Swiss Federal Laboratories for Materials Science and technology (Dübendorf, Switzerland) in prof. Anke Weidenkaff and Dr. Davide Ferri group, where he has designed a set up for coupling in situ XAS and IR spectroscopies. From 2013 up today he is assistant professor of physical chemistry and heterogeneous catalysis at the department of chemistry of the Università degli Studi di Milano.

Up today, he has published 45 papers on the most renowned international journals in catalysis and its applications (h-index = 20, according to scopus, Author ID: 8563610400), 2 patents, 2 book chapters and presented more than 65 communications, most of them in oral form, at several international and national scientific congresses.

His research interests span from the preparation (e.g. by flame spray pyrolysis), characterization (including *in-situ* X-ray absorption spectroscopy, XANES and EXAFS, as user at the synchrotron radiation facilities of HASYLAB, ANKA, SLS and ESRF) and testing of different types of catalysts for several catalytic applications (Flameless Combustion of Methane, Selective Reduction of NOx by H_2 under Lean Burn Conditions, production of alcohols from syngas and photocatalytic hydrogen production), to the design of novel photocatalytic reactors and spectroscopic cells, covering all aspects of heterogeneous catalysis. In particular, he is presently focusing his research on photocatalytic hydrogen production by both photo-steam reforming of volatile organics and water splitting. The latter topic includes the development of novel photoelectrodes based on i) vertical oriented TiO_2 nanotubes arrays photonic crystals prepared by electrochemical anodization, ii) solid state heterojunctions prepared by RF-magnetron sputtering, and iii) Inherently chiral macrocyclic oligothiophenes.

He has been awarded with the Debut in Research Prize - "ENI Award" 2008 for his PhD thesis.

Selected Publications

1. G.L. Chiarello, M. Bernareggi, M. Pedroni, M. Magni, S.M. Pietralunga, A. Tagliaferri, E. Vassallo, E. Selli, Enhanced photopromoted electron transfer over a bilayer WO_3 n–n heterojunction prepared by RF diode sputtering, *Journal of Materials Chemistry A*, 5 (**2017**) 12977–12989.
2. G.L. Chiarello, A. Zuliani, D. Ceresoli, R. Martinazzo, E. Selli, Exploiting the Photonic Crystal Properties of TiO_2 Nanotube Arrays to Enhance Photocatalytic Hydrogen Production, *ACS Catalysis*, 6 (**2016**) 1345–1353.
3. G.L. Chiarello, D. Ferri, Modulated excitation extended X-ray absorption fine structure spectroscopy, Physical Chemistry Chemical Physics, 17 (**2015**) 10579–10591

4. I. Sharafutdinov, C. Fink Elkjær, Hudson Wallace Pereira de Carvalho, D. Gardini, G.L. Chiarello, C. Danvad Damsgaard, J. Birkedal Wagner, J.D. Grunwaldt, S. Dahl, I. Chorkendorff Intermetallic compounds of Ni and Ga as catalysts for the synthesis of methanol, *J. Catal.* 320 (**2014**) 77–88
5. G.L. Chiarello, M. Nachtegaal, V. Marchionni, L. Quaroni, D. Ferri, Adding diffuse reflectance infrared Fourier transform spectroscopy capability to extended x-ray-absorption fine structure in a new cell to study solid catalysts in combination with a modulation approach, *Review of Scientific Instruments*, 85 (**2014**) 074102
6. G.L. Chiarello, M.V. Dozzi, M. Scavini, J.D. Grunwaldt, E. Selli, One step flame-made fluorinated Pt/TiO_2 photocatalysts for hydrogen production, *App. Catal. B: Environ*., 160–161 (**2014**) 144–151
7. D. Ferri, M.A. Newton, M. Di Michiel, G.L. Chiarello, S. Yoon, Y. Lu, J. Andrieux, Revealing the Dynamic Structure of Complex Solid Catalysts Using Modulated Excitation X-ray Diffraction, *Angew. Chem. Int. Ed.*, 53 (**2014**) 8890–8894
8. D. Ferri, M.A. Newton, M. Di Michiel, S Yoon, G.L. Chiarello, V. Marchionni, S.K. Matam, M.H. Aguirre, A. Weidenkaff, F. Wend, J. Giesho, Synchrotron high energy X-ray methods coupled to phase sensitive analysis to characterize aging of solid catalysts with enhanced sensitivity, *Phys. Chem. Chem. Phys.*, 15 (**2013**) 8629-8639.
9. Q.Wu, J.M. Christensen, G.L. Chiarello, L.D.L. Duchstein, J.B.Wagner, B. Temel, J.D. Grunwaldt, A.D. Jensen, Supported molybdenum carbide for higher alcohol synthesis from syngas, *Catal. Today*, 215 (**2013**) 162-168.
10. G.L. Chiarello, D. Ferri, E. Selli, Effect of the CH_3OH/H_2O ratio on the mechanism of the gas-phase photocatalytic reforming of methanol on noble metal-modified TiO_2, *Journal of Catalysis*, 280 (**2011**) 168-177.
11. G.L. Chiarello, A. Di Paola, L. Palmisano, E. Selli, Effect of titanium dioxide crystalline structure on the photocatalytic production of hydrogen, *Photochemical & Photobiological Sciences*, 10 (**2011**) 355-360.
12. G.L. Chiarello, M.H. Aguirre, E. Selli, Hydrogen production by photocatalytic steam reforming of methanol on noble metal-modified TiO_2, *Journal of Catalysis*, 273 (**2010**) 182-190.
13. G.L. Chiarello, E. Selli, L. Forni, Photocatalytic hydrogen production over flame spray pyrolysis-synthesised TiO_2 and Au/TiO_2, *Applied Catalysis B: Environmental*, 84 (**2008**) 332-339.
14. G.L. Chiarello, J.-D. Grunwaldt, D. Ferri, R. Krumeich, C. Oliva, L. Forni, A. Baiker, Flame-synthesized $LaCoO_3$-supported Pd 1. Structure, thermal stability and reducibility, *Journal of Catalysis*, 252 (**2007**) 127-136.
15. G.L. Chiarello, D. Ferri, J.-D. Grunwaldt, L. Forni, A. Baiker, Flame-synthesized $LaCoO_3$-supported Pd 2. Catalytic behavior in the reduction of NO by H_2 under lean conditions, *Journal of Catalysis*, 252 (**2007**) 137-147.
16. G.L. Chiarello, I. Rossetti, L. Forni, Flame-spray pyrolysis preparation of perovskites for methane catalytic combustion, *Journal of Catalysis*, 236 (**2005**) 251-261.