

Francesco Marra, short CV

Francesco Marra is an assistant professor of transport phenomena at Faculty of Engineering of University of Salerno (Italy) since 2005. Graduated in Chemical Engineering, in 1999, at University of Calabria (Italy), he completed the Ph.D. in Chemical Engineering at University of Salerno (Italy) in 2003.

At present he is engaged in research at the Department of Industrial Engineering (DIIn), in the section of Chemical and Food Engineering. He teaches transport phenomena in food processes (course in the MSc programme in Food Engineering), thermodynamics of chemical engineering (course in the BSc programme in Chemical Engineering) and Principles of Chemical and Environmental Engineering (course in the BSc programme in Environmental Engineering). Since one year ago, he serves as head of the International Committee of the School of Chemical and Food Engineering. He is also member of the committee of Ph.D. programme of Chemical Engineering.

Visiting scientist at University College Dublin (Ireland) in 2004; research fellow University of California, in Davis, CA, USA, in 2008 and 2010. Erasmus lecturer at University College Dublin (Ireland) in 2011 and at Corvinus University of Budapest (Hungary) in 2009.

He is an expert of virtualization of food processes and appliances for food processing, food processing assisted by electromagnetic fields, modeling of transport phenomena in multi-physics context, engineering of innovative prototypes for food processing. Recently he is also involved in developing in-vitro systems for the understanding of human digestion. He cooperates also with a research group working about drug micronization assisted by processes using supercritical fluids.

Guest curator of a special section of the Journal of Food Engineering (volume 71 issue 3 – 2005) devoted to mathematical modeling in food process engineering, at present Guest Editor of a special issue of Journal of Food Engineering on Virtualization of Processes in Food Engineering, he authored over 60 scientific papers published in refereed international journals, in books and in international conferences. Recently he has signed a contract with Springer for co-editing a book on “Dielectric properties and Experimental measurement – Food, Bio-systems and Health Materials”, to be completed by the end of 2015.

He is responsible for research activity financed with national public funds as well as with private funds through specific research agreements entered into between the DICA and DIIn with companies such as Italian and multinational companies.

He is professional member of IFT (Institute of Food Technologists, Food Engineering Division, Chicago, IL, USA), of ISFE (International Society of Food Engineering, Pullman, WA, USA), which is the Special Interest Group dedicated to Food Engineering of the International Union of Food Science & Technology (IUFoST) and of EHEDG (The European Hygienic Engineering & Design Group, Frankfurt, Germany). He is also member of ISEKI Food Association and he coordinate a Special Interest Group on Virtualization of Food Processes.

He leads an international working group on virtualization of processes in food engineering, involving some of worldwide known researchers in this fields.

He is co-chairing the organization committee of the first international school on Modeling and Simulation in Food and Bio Processes MSFS2016, to be held in Capri island, NA, Italy, 6-9 June 2016.

He chaired the organization of International Symposium “Virtualization of Processes in Food Engineering”, held at University of Salerno, 1-3 October 2014. In 2013 he was moderator of a special symposium on “Electro-heating in Food Engineering: A Spectrum of Possibilities” at IFT annual Meeting, Chicago, USA.

LIST OF RELEVANT PAPERS

Papers on peer-revised journals (indexed by ISI and/or Scopus)

- Uyar R., Bedane T.F., Erdogan F., Palazoglu T.K., Farag K. W., Marra F. (2015) Radio-frequency thawing of food products – A computational study. *JOURNAL OF FOOD ENGINEERING*, 146, p. 163-171
- Dalmoro, A., Barba, A.A., Caputo, S., Marra, F., Lamberti, G. (2015) Microwave technology applied in post-harvest treatments of cereals and legumes. *CHEMICAL ENGINEERING TRANSACTIONS*, 44, p. 13-18
- Barrios S., Lema P., Marra F. (2014). Modelling Passive Modified Atmosphere Packaging of Strawberries: Numerical Analysis and Model Validation. *INTERNATIONAL FOOD RESEARCH JOURNAL*, 21 (2), p. 507-515
- R. Uyar, F. Erdogan, F. Marra (2014) Effect of Load Volume on Power Absorption and Temperature Evolution during Radio-Frequency Heating of Meat Cubes: a Computational Study. *FOOD AND BIOPRODUCTS PROCESSING*
- A.A. Barba, M. d'Amore, M. Rispoli, F. Marra, Lamberti G. (2014) Microwave assisted drying of banana: effects on reducing sugars and polyphenols contents. *CZECH JOURNAL OF FOOD SCIENCES*, 32 (4), p. 369-375
- Francesco Marra (2014). Mathematical Model of Solid Food Pasteurization by Ohmic Heating: Influence of Process Parameters - 236437. *THE SCIENTIFIC WORLD JOURNAL*, Article ID 236437, p.1-8 , ISSN: 1537-744X
- J.G. Lyng, J.M. Arimi, M. Scully, F. Marra (2014). The influence of compositional changes in reconstituted potato flakes on thermal and dielectric properties and temperatures following microwave heating. *JOURNAL OF FOOD ENGINEERING*, vol. 124, p. 133-142
- Francesco Marra (2013). Impact of freezing rate on electrical conductivity of produce. *SPRINGERPLUS* 2 (1), 1-5
- Daniela Flavia Olivera, Viviana O. Salvadori, Francesco Marra (2013). Ohmic treatment of fresh foods: Effect on textural properties. *INTERNATIONAL FOOD RESEARCH JOURNAL*, vol. 20 (4), p. 1617-1621
- James G. Lyng, Lu Zhang, Francesco Marra, Nigel P. Brunton (2013). Effect of freezing rate and comminution on dielectric properties of pork. *CZECH JOURNAL OF FOOD SCIENCES*, vol. 31 (5), p. 413-418
- Francesco Marra, Iolanda De Marco, Ernesto Reverchon (2012). Numerical analysis of the characteristic times controlling supercritical antisolvent micronization. *CHEMICAL ENGINEERING SCIENCE*, vol. 71, p. 39-45
- Mariangela Pace, Maria Valeria De Bonis, Francesco Marra, Gianpaolo Ruocco (2011). Characterization of a combination oven prototype: Effects of microwave exposure and enhanced convection to local temperature rise in a moist substrate. *INTERNATIONAL COMMUNICATIONS IN HEAT AND MASS TRANSFER*, vol. 38, p. 557-564
- Gianpaolo Ruocco, Maria V. De Bonis, Francesco Marra (2011). Combining microwave and jet-impingement in a oven prototype. *PROCEDIA FOOD SCIENCE*, vol. 1, p. 1331-1337

Francesco Marra, Maria J. Ferrua, R. Paul Singh (2011). Experimental characterization of the fluid dynamics in an in- vitro system simulating the peristaltic movement of the stomach wall. *PROCEDIA FOOD SCIENCE*, vol. 1, p. 1473-1478

Francesco MARRA, Maria Valeria DE BONIS, Gianpaolo RUOCCO (2010). Combined microwaves and forced convection heating: a conjugate approach. *JOURNAL OF FOOD ENGINEERING*, vol. 97, p. 31-

FARAG K, MARRA F., LYNG J.G, MORGAN D.J. AND CRONIN D.A (2010). Temperature changes and power consumption during radio frequency tempering of beef lean/fat formulations. *FOOD AND BIOPROCESS TECHNOLOGY*, vol. 3, p. 732-740

MARRA F., ZELL M, LYNG J.G, MORGAN D.J. AND CRONIN D.A (2009). Analysis of heat transfer during ohmic processing of a solid food. *JOURNAL OF FOOD ENGINEERING*, vol. 91(1), p. 56-63

MARRA F., ZHANG L, LYNG J. G (2009). Radio frequency treatment of foods: review of recent advances. *JOURNAL OF FOOD ENGINEERING*, vol. 91(4), p. 497-508

ROMANO V, MARRA F.. (2008). A numerical analysis of radio frequency heating of regular shaped foodstuff. *JOURNAL OF FOOD ENGINEERING*, vol. 84, p. 449-457

MARRA F, LYNG J, ROMANO V.R., MCKENNA B (2007). Radio-Frequency heating of foodstuff: solution and validation of a mathematical model. *JOURNAL OF FOOD ENGINEERING*, vol. 79, p. 998-1006

Romano V.R., Marra F., Tammaro U. (2005). Modelling of microwave heating of foodstuff: Study on the influence of sample dimensions with a FEM approach . *JOURNAL OF FOOD ENGINEERING*, vol. 71, p. 233-241

MARRA F., ROMANO V.R. (2003). A mathematical model to study the influence of wireless temperature sensor during assessment of canned food sterilization. *JOURNAL OF FOOD ENGINEERING*, vol. 59, p. 245-252

Editing

SILVA C., ACIERNO D., MCKENNA B., MARRA F., ROMANO V.R. (2003). Finite Element Modelling in Chemical and Food Engineering.. *SOVERIA MANNELLI: Rubbettino Scientifica*

Book chapters

Gianpaolo Ruocco, Maria Valeria De Bonis, Francesco Marra (in press) Modeling RF Heating using Computational Fluid Dynamics. In Awuah, Ramaswamy and Tang Eds. *Radio-Frequency Heating in Food Processing: Principles and Applications*. CRC Press

Francesco Marra, Tesfaye Faye Bedane, Rahmi Uyar, Ferruh Erdogan and James G. Lyng (2014) Application of Radiowave Frequency in Food Processing. In: S. Bhattacharya Ed. *Conventional and Advanced Food Processing Technologies*, J. Wiley & Sons

Francesco Marra (2012). Microwave and Radio-Frequency Heating Processes for Foods. In: Jasim Ahmed & M. Shafiur Rahman (Eds), Handbook of Food Process Design. vol. 2, p. 1031-1056, Chichester:Blackwell Publishing by John Wiley & Sons, ISBN: 9781444330113, doi: 10.1002/9781444398274.ch35

Lu ZHANG, Francesco MARRA (2010). Radio Frequency Heating of Foods. In: M. M. Farid. Mathematical Modeling of Food Processing. p. 691-706, BOCA RATON ,LONDON, NEW YORK,:CRC Press, ISBN: 9781420053517

MARRA F. (2009). Numerical analysis for kinetics and yield of wood biomass pyrolysis. In: N. MASTORAKIS. Advances in Numerical Methods. p. 127-136, NORWELL:Springer, ISBN: 978-0-387-76482-5

Proceedings

Francesco Marra, Ernesto Reverchon, Iolanda De Marco (2013). Supercritical antisolvent micronization: characteristic times. In: E. Reverchon & I. De Marco. 10th Conference on Supercritical Fluids and Their Applications. p. 221-226, E. Reverchon & I. De Marco, ISBN: 88-7897-061-1, April 29 - May 6, 2013

Francesco Marra (2012). Multi-Physics Modeling as a Design Tool: Advances and Prospects. In: IFT12 digital Book of Abstracts. vol. , p. 024-02, Chicago:Institute of Food Technologists, Las Vegas, 2012, June 25-28

Francesco Marra, R. Paul Singh (2011). Modeling fluid flow in gastric digestion simulators. In: . IFT11 book of abstracts. p. , Chicago:Institute of Food Technologists, ISBN: 0010821236, New Orleans, 2011, June 11-14

Sofia Barrios, Patricia Lema, Francesco Marra (2011). Modelling passive modified atmosphere packaging of strawberries: numerical analysis and model validation. In: Taukis, Stoforos, Karathanos, Saravacos.. ICEF11 - Food Process Engineering in a Changing World.. Atene - Grecia, 22 - 26 Maggio 2011, vol. 2, p. 1005-1006, Atene:Cosmosware, ISBN: 9789608978935

Francesco Marra, James Lyng (2011). On the pasteurization of solid foods by ohmic heating. In: . IFT11 book of abstracts. vol. , p. , Chicago:Institute of Food Technologists, ISBN: 9780010821239, New Orleans, 2011, June 11-14

Francesco Marra, Maria Valeria De Bonis, Gianpaolo Ruocco (2011). Simulation of controlled and intensified food processing by integral localized forced convection and microwave exposure: A multiphysics approach. In: IFT11 Book of Abstracts. p. , Chicago:Institute of Food Technologists, New Orleans, 2011, June 11-14

Francesco Marra, Maria Valeria De Bonis, Gianpaolo Ruocco (2010). An integrated computational framework for combined microwave/convection treatment. In: Institute of Food Technologists. IFT10 - Book of Abstracts. Chicago (USA), vol. 1, p. 103-104, Chicago, IL:Institute of Food Technologists, ISBN: 0010821236

Sofia Barrios, Patrizia Lema, Francesco Marra (2010). Storage of blueberries: NUMerical analysis of modified atmosphere packaging. In: Institute of Food Technologists. IFT10 - Book of Abstracts. Chicago (USA), vol. 1, p. 159-160, Chicago, IL: Institute of Food Technologists, ISBN: 0010821236

- FERRUA M, SINGH R. P, MARRA F (2009). PIV analysis of the flow field within a closed system that simulates the peristaltic movement of the stomach wall. In: IFT09 book of abstracts. Anaheim, CA, USA, 6-9 June, 2009, p. 243, Chicago, IL :Institute of Food Technologists
- BARRIOS S, LEMA P, MARRA F (2009). Storage of Fresh Fruits: Numerical Analysis of Active Packaging Effects. In: New Challenges in Food Preservation. Budapest - Hungary, 11-13 November 2009, p. P127
- MARRA F. (2007). A short review of capacitive dielectric treatment of foodstuffs. In: -. European Conference of Chemical Engineering - 6 Book of Abstracts. Copenhagen (Denmark), 16-21 September 2007, vol. 2, p. 975-976, COPENHAGEN: Rafiqul Gani and Kim Dam-Johansen, ISBN: 978-87-91435-56-0
- Francesco Marra (2007). Application of CHL model for estimating biomass pyrolysis yield. In: Hefferlin, R; Kibler, MR. COMPUTATIONAL CHEMISTRY AND APPLICATIONS IN ELECTRONICS. p. 71-75, Athens: WORLD SCIENTIFIC AND ENGINEERING ACAD AND SOC, AG LOANNOU THEOLOGOU , ISBN: 9789606766268, Egypt, Cairo, DEC 29-31, 2007
- ROMANO V.R., MARRA F (2006). Multi-physics phenomena during Radio-Frequency Heating of Regular Shaped Foodstuff. In: IUFOST 2006 13th World Congress of Food Science and Technology. p. 565-566, NANTES:-, Nantes, 17-21 September 2006
- MARRA F., ROMANO V (2002). Canned food sterilization: analysis of low-acid food and acid food processing with a fem approach. In: Computational heat and mass transfer - CHMT2001. vol. 1, p. 228-234, RIO DE JANEIRO: editora E-papers, Rio de Janeiro, 22-26 October 2001
- MARRA F., ROMANO V (2001). ANALYSIS BY FEM OF HEAT TRANSFER INTO CANNED FOOD DURING STERILIZATION: INFLUENCE OF DIMENSIONS OF WIRELESS TEMPERATURE SENSORS. In: IChEap'01, 5th Conference. p. , 20-23 May 2001