



UNIVERSITÀ  
DEGLI STUDI  
DI PALERMO



Department of Civil, Environmental, Aerospace, Materials  
Engineering, Palermo University



## 1st Workshop

**Are we ready for establishing the basis  
for moving towards standardised MBR  
modelling?**

**Program and practical information**

**September 26, 2018  
Palermo, Italy**

**Organized by:**

**International Water Association Task Group on Membrane  
bioreactor modelling and control**

# Foreword

Throughout the past few decades, the aim of achieving the imposed stringent effluent regulations has driven most of the research carried out in the wastewater treatment field. Within this aim, membrane bioreactors (MBRs) are being increasingly developed and implemented to treat wastewater due to their several advantages over other activated sludge processes (e.g. improvement in effluent quality to water reuse standards, possible production of disinfected effluent, and reduced footprint and sludge yield). Moreover, recent publications have reported an increasing interest in the application of anaerobic MBR technology (AnMBR) for wastewater treatment. In this respect, AnMBR could be regarded as a candidate to convert traditional wastewater treatment plants (WWTPs) into water resource recovery facilities (WRRFs), meeting the new, green approach of considering wastewater as a renewable source of energy, reclaimed water and valuable nutrients.

Despite the efforts performed in MBR-based technology modelling, this topic has not yet fully matured and need further work. Specifically, the research community has not yet reached a general consensus about some critical issues related to the biological and physico-chemical processes and their kinetics (e.g. kinetics of SMP formation/degradation process, precipitation processes, biodegradability in terms of high sludge retention time or aerobic/anaerobic conditions, etc.) and, consequently, to translate them into mathematical expressions (e.g. SMP modelling, influent fractionation, etc.). Furthermore, up to now, a complete, clear and generally accepted nomenclature/terminology surrounding the MBR modelling field is still lacking, which makes it often difficult to compare results among different models.

This workshop is organised and supported by the IWA Task Group (TG) on Membrane Bioreactor Modelling and Control and aims at establishing the basis for moving towards standardised MBR modelling.

## Objectives

The workshop aims to establish the basis for moving towards a common and standardized nomenclature/terminology related to MBR modelling. To this aim, the workshop will focus on reviewing the current state-of-the-art MBR technology and identify current and future needs within the MBR modelling field.

## Chairs

Chair Prof. Giorgio Mannina (Università di Palermo, Italy)

Co-Chair Prof. Àngel Robles (Universitat de València, Spain)

## Speakers

- Gianluigi Buttiglieri – ICRA and LEQUIA-UdG, Spain
- Daniele Di Trapani – Università di Palermo, Italy
- Victoria Ruano – University of Valencia, Spain
- Nesrine KALBOUSSI – INRA-SUPAGRO, France
- Christoph Brepols – Erftverband, Germany
- Marc Heran – Université Montpellier, France



# Program – Wednesday 26 Sep 2018

Room: Seminari C – Bld. 19, Viale delle Scienze, Palermo Italy

Time	Topic	Presenter
09:15 - 09:30	<b>Welcome Remarks and Workshop Chartering:</b> Motivation, scope, and objectives. Introductions and agenda review.	Giorgio Mannina Angel Robles
	<b>Chair Session: Prof. Ashok Pandey</b>	
09:30 - 09:50	<b>Presentation #1:</b> Advances in Integrated MBR modelling Giorgio Mannina, Gaetano Di Bella, Daniele Di Trapani, Alida Cosenza	Daniele Di Trapani
09:50 - 10:10	State-of-the-art MBR-based technology for anaerobic wastewater treatment: Identifying key issues for AnMBR modelling Angel Robles and Victoria Ruano	Angel Robles Victoria Ruano
10:10 - 11:00	<b>MBR control and optimisation</b> Gianluigi Buttiglieri, Ignasi Rodríguez-Roda and Joaquim Comas	Gianluigi Buttiglieri
11:00 - 11:30	Coffee break	
11:30 - 11:50	<b>Presentation #3:</b> Where we are and what is missing within biological process modelling of MBR-based systems Nesrine Kalboussi, Jérôme Harmand, Ilse Smets	Nesrine Kalboussi
11:50 - 12:10	<b>Presentation #4:</b> Where we are and what is missing within filtration process modelling of MBR-based systems. Christoph Brepols and Marc Heran	Christoph Brepols Marc Heran
12:50 - 13:00	<b>Discussion Period:</b> identifying gaps towards an standardised criteria to model MBR-based systems	Giorgio Mannina Angel Robles
13:00 - 13:30	Wrap-up, composing summary, report and presentation	Giorgio Mannina Angel Robles



# CONTACTS

e-mail: [giorgio.mannina@unipa.it](mailto:giorgio.mannina@unipa.it) Task Group Chair

IWA Task Group:

<https://iwa-connect.org/#/group/task-group-on-membrane-bioreactor-modelling-and-control>

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