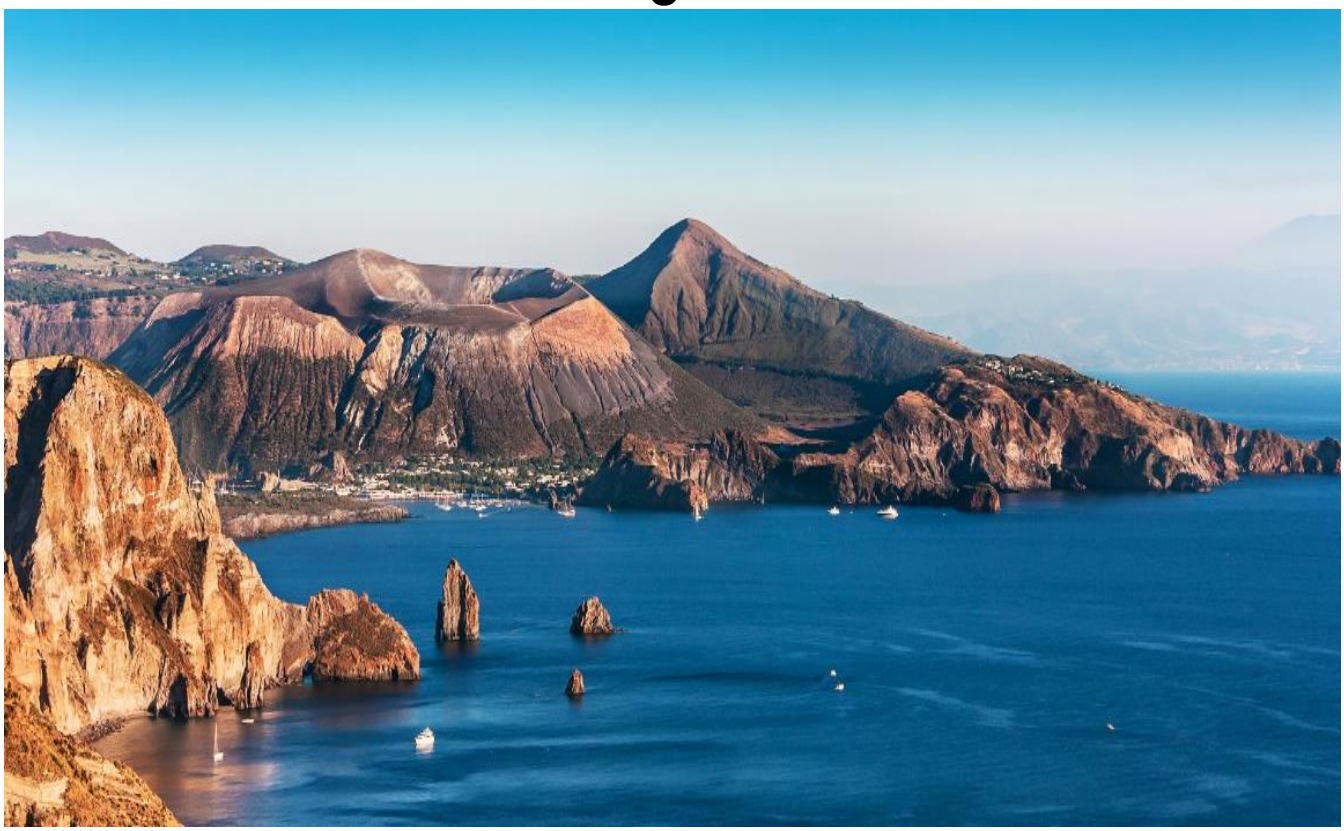
AICIng

Associazione Italiana di Chimica per Ingegneria

VIII Workshop Nazionale AICIng

27-29 Giugno 2019



"ADVANCED MATERIALS FOR SUSTAINABLE ENERGY, ENVIRONMENT AND SENSING APPLICATIONS"

ATTI DEL CONVEGNO

17:30	POSTER SESSION 	
20:00	**Cena Sociale tipica Eoliana**	
Sabato 29 Giugno 2019		
SESSIONE 5: *Chairperson* Piero Mastrorilli		
09:30	O18	*"BaCe0.65Zr0.20Y0.15O3-δ-Ce0.85Gd0.15O2-δ composite: a MIEC ceramic membrane for H_2 purification"* **Cecilia Mortalò**, E. Rebollo, S. Escolástico, J. M. Serra, C. Leonelli, M. Fabrizio
09:45	O19	*"Electrospinning and photo-crosslinking of rubber nanofiber membranes"* **Alessandra Vitale**, Roberta Bongiovanni
10:00	O20	*"Evaluation of Cardiac Fibroblast Activation via Traction Force Microscopy"* **Pamela Mozetic**, Andrea Zancla, Monica Orsini, Marcella Trombetta, Giancarlo Forte, Alberto Rainer
10:15	O21	*"Bio-based composites from natural pectins and hemp fibers as novel carriers of green pesticides for agricultural applications"* **Gianluca Viscusi**, Giuliana Gorrasi
10:30	O22	*"Nanocellulose: an innovative eco-sustainable resource"* **Laura Riva**, Nadia Pastori, Andrea Fiorati, Massimo Cametti, Alessandro Sacchetti, Carlo Punta
10:45	O23	*"Poisoning tolerance of platinum-group-metal-free catalysts for the oxygen reduction reaction"* **Valerio C.A. Ficca**, Barbara Mecheri, Carlo Santoro, Alessandra D'Epifanio, Silvia Licoccia, Plamen Atanassov
		
SESSIONE 6: *Chairperson* Fabio Ganazzoli		
11:30	O24	*"Evaluation of NiO-SCCNTs core-shell structure; new insight into shell thickness effect on gas sensing properties"* **Kaveh Movlaee**, Giovanni Neri
11:45	O25	*"In vitro antiproliferative and antibacterial activities of sol-gel materials containing different amount of CGA"* **Elisabetta Tranquillo**, Federico Barrino, Michelina Catauro
12:00	O26	*"C_3N_4 for CO_2 photoreduction: catalyst performance and stability in batch and continuous reactor"* **Francesca Rita Pomilla**, Giuseppe Marcì, Elisa Isabel Garcia Lopez, Giuseppe Barbieri, Adele Brunetti, Raffaele Molinari, Leonardo Palmisano
12:15	O27	*"β-glucosidase immobilization into mesoporous silica nanoparticles: the effect of pore size and morphology"* Aniello Costantini, Valeria Califano, Brigida Silvestri, **Virginia Venezia**, Filomena Sannino, Antonio Aronne
12:30		**Premiazioni**
12:45		**e Chiusura dei lavori**

C_3N_4 for CO_2 photoreduction: catalyst performance and stability in batch and continuous reactor

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The increase of CO_2 is causing the climate change promoting the global warming.[1] Photocatalysis is an eco-friendly process where a semiconductor under irradiation can transform CO_2 to fuel. Recently, C_3N_4 was identified as a promising photocatalyst for CO_2 photoreduction.[2] In this study, various C_3N_4 samples were prepared and characterized. CO_2 photoreduction was carried out by using C_3N_4 as powder and coated on glass support in a batch reactor or embedded in a Nafion membrane in a continuous reactor. In all cases, aliquots of the reaction mixture at different irradiation times were analysed by GC. CO_2 photoreduction occurred giving CO, CH_4, MeOH, EtOH and HCOH, the main products depending on the experimental conditions. In particular, the reactor containing C_3N_4 as powder produced CH_4 as the main product.[3] The glass supported photocatalyst, instead, produced only CO, but a photocorrosion of C_3N_4 occurred during the photocatalytic test.[4] The best C_3N_4 performances were obtained in the continuous membrane reactor.[5] These results indicate that the efficiency of C_3N_4 for CO_2 photoreduction strongly depends on the type of reactor and the experimental conditions adopted.

References

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[2] J. Wen, J. Xie, X. Chen, X. Li. *Appl. Surf. Sci.*, **2017**, 39, 72-123.
[3] F. R. Pomilla, R. Molinari, E. I. García-López, G. Marcì, L. Palmisano. Research and Technologies for Society and Industry (IEEE-RTSI), ISBN: CFP18C29-ART, Part Number: 978-1-5386-6286-3, **2018**, 478-483
[4] F. R. Pomilla, M. A. L. R. M. Cortes, J. W. J. Hamilton, R. Molinari, G. Barbieri, G. Marcì, L. Palmisano, P. K. Sharma, A. Brown, J. A. Byrne. *J. Phys. Chem. C*, **2018**, 122, 28727-28738.
[5] F. R. Pomilla, A. Brunetti, G. Marcì, E. I. Garcìa-Lòpez, E. Fontananova, L. Palmisano, G. Barbieri. *ACS Sustain. Chem. Eng.*, **2018**, 6(7), 8743-8753