Martedì **16 Giugno 2023** alle ore **16:00** presso l'**aula F**

la Dott.ssa **Manuela Melucci**

Consiglio Nazionale delle Ricerche, Istituto per la Sintesi Organica e la Fotoreattività (CNR-ISOF), Bologna, Italy

terrà il seminario dal titolo:

Chemical tailoring of graphene materials for water remediation, sensing and carbocatalysis

Graphene and 2D materials are gaining increasing interest as multifunctional platforms for realizing devices and technologies for energy, sensing, biomedical and environmental applications. Key features such as high surface area, chemical tuneability and processability determine their recognition, transduction and transport properties.[1]

Among the others, graphene oxide (GO) is particularly suitable for property-specific tailoring through many site-specific chemical manipulations of the oxygen containing functional groups at the nanosheets surface.

In this talk, I will present selected case-studies of chemically modified GO, realized at ISOF, and their applications as active materials for water purification, [2] electrochemical sensors [3] and carbocatalysis.[4] I will describe our recent results on covalent functionalization procedures [5] and design strategies for i) enhanced adsorption of emerging contaminants (i.e. per-and polyfluoroalkyl substances (PFAS), antibiotics) from drinking water, ii) electrochemical transduction for pesticides monitoring in water and ii) CO2 capture and utilization in chemical transformations.

Finally, polymer-graphene based composites [6] for water filters will be presented, with the ongoing technology transfer and validation from lab scale to industrial production. [7].

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[2] a) S. Mantovani, T. D. Marforio, S. Khaliha, A. Kovtun, L. Favaretto, F. Tunioli, M. L. Navacchia, V. Palermo, M. Calvaresi, M. Melucci, *RSC Env. Science and Engineering*, **2023**, 1030, b) S. Khaliha, A. Bianchi, A. Kovtun, F. Tunioli, A. Boschi, M. Zambianchi, D. Paci, L. Bocchi, S. Valsecchi, S. Polesello, A. Liscio, M. Bergamini, M. Brunetti, M.L. Navacchia, V. Palermo, M. Melucci, *Sep. Purif. Technol*. **2022**, 121826.
[3] B. Zanfrognini, L. Favaretto, V. Quintano, J. Sun, E. Treossi, M. Melucci, V. Palermo, C. Zanardi, F. Poletti, *Sensors & Actuators: B. Chemical,* **2021**, 130253.
[4] A. Pintus, S. Mantovani, A. Kovtun, G. Bertuzzi, M. Melucci, M. Bandini *Chem. Eur. J.*, **2022**, e202200333.
[5] S. Mantovani, S. Khaliha, T.D. Marforio, A. Kovtun, L. Favaretto, F. Tunioli, A. Bianchi, G. Petrone, A. Liscio, V. Palermo, M. Calvaresi, M.L. Navacchia, M. Melucci, *Chem. Commun.* **2022**, 9766. L. Lombardi, A. Kovtun, S. Mantovani, G. Bertuzzi, L. Favaretto, C. Bettini, V. Palermo, M. Melucci, M. Bandini *Chem. Eur. J.*, **2022**, e202200333.
[6] a) F. Tunioli, S. Khaliha, S. Mantovani, A. Kovtun, Z. Xia, M. Sajad Sorayani Bafqi, B. Saner Okan, V. Palermo, M.L. Navacchia, M. Melucci, *J. Env. Chem. Eng.*, **2023**, 109566. b) M. Zambianchi, S. Khaliha, A. Bianchi, F. Tunioli, A. Kovtun, M.L. Navacchia, A. Salatino, Z. Xia, E. Briñas, E. Vázquez, D. Paci, V. Palermo, L. Bocchi, B. Casentini, M. Melucci, M., *J. Membr. Sci.* **2022**, 120707.
[7] a) M. Melucci et al, PCTIB2019058300, b) M. Melucci et al, EP21207308, c) https://graphene-flagship.eu/innovation/spearheads/c3-sh01-graphil/, https://liferemembrance.eu

La presenza della S. V. sarà molto gradita

Il Direttore del Dipartimento
Michele Maggini

Dr. M. Rancan