

## 2019 Spring Meeting



The 2019 Spring Meeting of the European Materials Research Society (E-MRS) will take place from May 27 to 31, 2019, in Nice, France (Congress & Exhibition Centre Acropolis). It will be the 37th of the series started in 1983.

This event is organized in conjunction with the International Conference on Advanced Materials (ICAM) of the International Union of Materials Research Societies (IUMRS).

The scientific programme will highlight the latest advances in materials research at an international level, with a strong emphasis on interdisciplinary research in both fundamental and applied areas.

The technical program of the meeting will include 28 symposia organized into 6 topical clusters :

- Materials for Energy
- Bio- and Soft Materials
- Nano-functional Materials
- 2 Dimensional Materials
- Materials, Electronics and Photonics
- Modelling and Characterization

***We look forward to your participation to create an outstanding 2019 E-MRS IUMRS ICAM Meeting!***

May 27-31, 2019

### ***Registration desk - opening hours***

Sunday	May 26	15:00 - 18:30 (reg. only)
Monday	May 27	07:30 - 18:00
Tuesday	May 28	08:00 - 18:00
Wednesday	May 29	08:00 - 18:00
Thursday	May 30	08:00 - 18:00
Friday	May 31	08:00 - 12:00



About Meetings News & Events Networking & Project



2018 Fall

2019 Spring

2019 Fall

2020 Spring

Deadlines

Symposia & program

Plenary sessions

Exhibition

EU-40 materials prize

Graduate student awards

Satellite events

Hotel reservation

Practical Information

Registration now open

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preview all symposia

BIO- AND SOFT MATERIALS

New strategies for smart biointerfaces

May 27, 2019   **May 28, 2019**   May 29, 2019   May 30, 2019   May 31, 2019

START AT   SUBJECT   View All    NUM.   ADD

### Biointerfaces at electrodes I : Mathieu Etienne

09:00   Design of enzyme electrodes for biofuel cell applications      L.4.1  

09:30   Redox Glyconanoparticles: Self-Assembly, Mediated Bioelectrocatalysis and the Solubilised Enzymatic Fuel Cell (SEFC)      L.4.2  

09:30   An antibacterial platform based on capacitive carbon-doped TiO<sub>2</sub> nanotubes after charging with direct/alternating currents      L.4.3  

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Resume : Electrical interactions between bacteria and the environment are delicate and essential [1][2]. For instance, by means of electron transfer, bacteria complete respiration on the cell membrane to supply energy for cell growth, proliferation, and maintenance and disturbing electron transfer in bacteria can raise the production of reactive oxygen species (ROS) to hinder growth. In this study [3], an external electrical current is applied to capacitive titania nanotubes doped with carbon (TNT-C) to evaluate the effects on bacteria killing and the underlying mechanism is investigated. When TNT-C is charged, post-charging antibacterial effects proportional to the capacitance are observed. This capacitance-based antibacterial system works well with both direct and alternating current (DC, AC) and the higher discharging capacity in the positive DC (DC<sup>+</sup>) group leads to better antibacterial performance. Extracellular electron transfer observed during early contact contributes to the surface-dependent post-charging antibacterial process. Physiologically, the electrical interaction deforms the bacteria morphology and elevates the intracellular reactive oxygen species level without impairing the growth of osteoblasts. This is the first systematic study on the post-charging antibacterial properties of biomaterials with tunable capacitance. Our finding spurs the design of light-independent antibacterial materials and provides insights into the use of electricity to modify biomaterials to complement other bacteria killing measures such as light irradiation. References [1] G. M. Wang, H. Q. Feng, et al. ACS Applied Materials and Interfaces, vol. 8, no. 37, pp. 24509 ? 24516 (2016). [2] G. M. Wang, W. H. Jin, et al. Biomaterials, vol. 124, pp. 25 ? 34 (2017). [3] G. M. Wang, H. Q. Feng, et al. Nature Communications, vol. 9, Paper 2055 (2018).

10:00   Three-Dimensional PEDOT Based Device Platform for the Isolation and Detection of Circulating Tumor Cells      L.4.4  

10:15   *Coffee break*

11:15   *Plenary Session 1*

12:30   *Lunch*

### Biointerfaces at electrodes II : Frederic Barriere

14:00   Biomolecule-carbon interfaces: an opportunity for the design of functional materials      L.5.1