NEWSLETTER

LAQV-REQUIMTE@Aveiro Newsletter n.17

LAQV-REQUIMTE UA is a hub of the Associated Laboratory for Green Chemistry (LAQV) of the Network of Chemistry and Technology (REQUIMTE) located in the Chemistry department of University of Aveiro (DQUA).

SEPTEMBER 2025

NEI 2025



LAQV@UA took part in the European Researchers' Night on September 27, bringing science closer to the community through hands-on activities, surprising experiments, and engaging conversations on sustainability, innovation, and the future of research.

Visitors explored exciting topics such as:

Happy juices – the science behind functional drinks

Pig cartilage-inspired technology – biomimicry in action

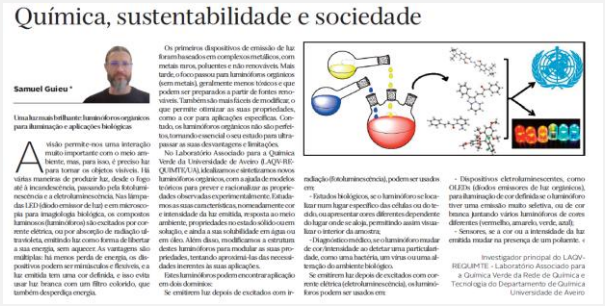
High-pressure food processing – for safer, healthier products

Light in Action – using light in diagnostics

Microbiota and breast cancer – enemy or ally?

It was a night of discovery, dialogue, and connection — showing how science can truly impact our daily lives.

Press Highlights



Química, sustentabilidade e sociedade

Samuel Guieu *

Uma luz mais brilhante: luminóforos orgânicos para iluminação e aplicações biológicas

A visão permite-nos uma interação muito importante com o meio ambiente, mas, para isso, é preciso luz para tomar os objetos visíveis. Há várias maneiras de produzir luz, desde o fogo até à incandescência, passando pela fotoluminescência e a eletroluminescência. Nas lâmpadas LED (díodo emissor de luz) e em microscopia para imagiologia biológica, os compostos luminosos (luminóforos) são excitados por corrente elétrica, ou por absorção de radiação ultravioleta, emitindo luz como forma de libertar a sua energia, sem aquecer. As vantagens são múltiplas: há menos perda de energia, os dispositivos podem ser miniaturizados e flexíveis, a luz emitida tem uma cor definida, e isso evita usar luz branca com um filtro colorido, que também desperdiça energia.

Os primeiros dispositivos de emissão de luz foram baseados em complexos metálicos, com metais raros, poluentes e não renováveis. Mais tarde, o foco passou para luminóforos orgânicos (sem metais), geralmente menos tóxicos e que podem ser preparados a partir de fontes renováveis. Também são mais fáceis de modificar, o que permite otimizar as suas propriedades, como a cor para aplicações específicas. Contudo, os luminóforos orgânicos não são perfeitos, tornando-se necessário o seu estudo para ultrapassar as suas desvantagens e limitações.

No Laboratório Associado para a Química Verde da Universidade de Aveiro (LAQV-REQUIMTE/UA), idealizamos e sintetizamos novos luminóforos orgânicos, com a ajuda de modelos teóricos para prever e racionalizar as propriedades observadas experimentalmente. Estudamos as suas características, nomeadamente cor e intensidade da luz emitida, resposta ao meio ambiente, propriedades no estado sólido ou numa solução, e ainda a sua solubilidade em água ou em óleo. Além disso, modificamos a estrutura destes luminóforos para modular as suas propriedades, tentando aproximá-las das necessidades inerentes às suas aplicações.

Estes luminóforos podem encontrar aplicação em dois domínios:

Se emitirem luz depois de excitados com radiação (fotoluminescência), podem ser usados em:

- Estudos biológicos, se o luminóforo se localizar num lugar específico das células ou do tecido, ou apresentar cores diferentes dependente do lugar onde se aloja, permitindo assim visualizar o interior da amostra;
- Diagnóstico médico, se o luminóforo mudar de cor/intensidade ao detetar uma particularidade, como uma bactéria, um vírus ou uma alteração do ambiente biológico.

Se emitirem luz depois de excitados com corrente elétrica (eletroluminescência), os luminóforos podem ser usados em:

- Dispositivos eletroluminescentes, como OLEDs (díodos emissores de luz orgânicos), para iluminação de cor definida se o luminóforo tiver uma emissão muito seletiva, ou de cor branca juntando vários luminóforos de cores diferentes (vermelho, amarelo, verde, azul);
- Sensores, se a cor ou a intensidade da luz emitida mudar na presença de um poluente.

Investigador principal do LAQV-REQUIMTE - Laboratório Associado para a Química Verde da Rede de Química e Tecnologia do Departamento de Química Universidade de Aveiro

Latest publication in the opinion section of the Diário de Aveiro newspaper, on the topic of Chemistry, Sustainability and Society refers to the research work of Researcher **Samuel Guieu**, which focuses on “Uma luz mais brilhante: luminóforos orgânicos para iluminação e aplicações biológicas”.

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PAST EVENTS



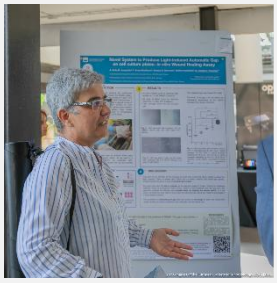
LAQV@UA at MaCKiE 2025 in Türkiye





From September 3–5, the International Conference on Mathematics in (bio/food) Chemical Kinetics and Engineering (MaCKiE) took place in Izmir, Türkiye. LAQV@UA was represented by Professor **Jorge Saraiva and** researcher **Carlos Pinto**, who both chaired sessions and delivered scientific presentations. Researcher **Carlos Pinto** presented his work: "Innovative ambient temperature hyperbaric inactivation of Alicyclobacillus acidoterrestris spores and effects of pasteurization pre-treatments." and Professor **Jorge Saraiva** delivered a keynote lecture titled: "High pressure for nonthermal processing and hyperbaric storage of foods".

21st Congress of the ESP





LAQV@UA was represented at the 21st Congress of the European Society for Photobiology, held in Bari, Italy, with several oral and poster presentations. Researcher **Cristina Dias** presented her work on the "Anti-tumoral effect of light-activated CD351 in breast and pancreatic cancer". Professor **Amparo Faustino** presented "Photo-antibacterial efficiency of metalloporphyrins, and "Photodynamic inactivation as a strategy to prevent bacterial infections in aquaculture". Poster presentations included PhD student **Ana Joaquinito**: light-induced wound healing assay system and research by Leticia Costa and Cátia Vieira on photodynamic inactivation of E.coli and S.aureus using cationic diketopyrrolopyrroles.

LAQV-UA Researchers Among the World's Most Influential Scientists



The University of Aveiro has seen an increase in the number of scientists included in the lists of the world's most influential researchers, according to rankings based on scientific citation metrics. Among those distinguished. This international recognition reinforces LAQV@UA scientific excellence and its contribution to global leadership in sustainable and innovative research.

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ESP AWARD



A highlight of the 21st Congress of the European Society for Photobiology, held in Bari, Italy was the awarding of the Supplement to the PhD Diploma to Cristina J. Dias by the European Society for Photobiology. This prestigious distinction aims to recognize academic excellence in photobiology and to enhance the professional visibility of emerging researchers within the field.

PAST EVENTS



UA General Council



On 30 September, researcher Elisabete Coelho took her seat on the General Council of the University of Aveiro. The General Council is composed of 19 members: 10 representatives of the teachers and researchers, three students, one representative of the technical, administrative and management staff and five external personalities of recognized merit, not belonging to the University of Aveiro with relevant knowledge and experience.

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Virtual Reality Enhances Chemistry Teaching at UA



University of Aveiro has installed four Virtual Reality stations in the Department of Chemistry as part of a European project aimed at innovating science education. Coordinated by the Cracow University of Technology, the project involves five European partners. At UA, the team includes Professor **Vera Silva** from LAQV@UA and Mário Vairinhos and Rui Raposo (DigiMedia).

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Meeting of Camp&Valor Project



On September 25, Sónia Silva and Susana Cardoso, researchers from LAQV@UA, attended the kick-off meeting of the Camp&Valor project, held at the Department of Chemistry of the University of Aveiro. The meeting marked the official start of the project, bringing together partners to align objectives, plan initial activities, and foster collaboration. LAQV@UA's participation highlights its ongoing commitment to research that promotes sustainability and the valorization of natural resources.

Meeting of BioCosMap Project



On September 8, researchers Sónia Silva, Susana Cardoso and PhD student Ana Rita Circuncisão, participated in the kick-off meeting of the BioCosMap project, which took place at the headquarters of Montesino, located in the Brigantia EcoPark, in Bragança. The meeting marked the official launch of the project and brought together partners to outline the strategic objectives and collaborative work plan for the upcoming phases.

PAST EVENTS



15th International Meeting of the Portuguese Carbohydrate Group & GlycoTwinning



The GlycoFoodChem team actively participated in the 15th International Meeting of the Portuguese Carbohydrate Group & GlycoTwinning, held in Coimbra from September 15–17. During the event, the group's PhD students presented their research through both oral communications and poster sessions, contributing to the scientific discussions on the latest advances in carbohydrate and glycoscience research. Professor **Manuel A. Coimbra** chaired one of the scientific sessions, highlighting the group's leadership and recognition within the community.In addition, Researcher **Elisabete Coelho** was part of the organizing committee, showcasing GlycoFoodChem's active engagement not only in research but also in fostering scientific collaboration and knowledge exchange. The meeting provided an excellent opportunity to share research findings, strengthen collaborations, and promote the group's ongoing work in food chemistry and carbohydrate science.

FUNDING

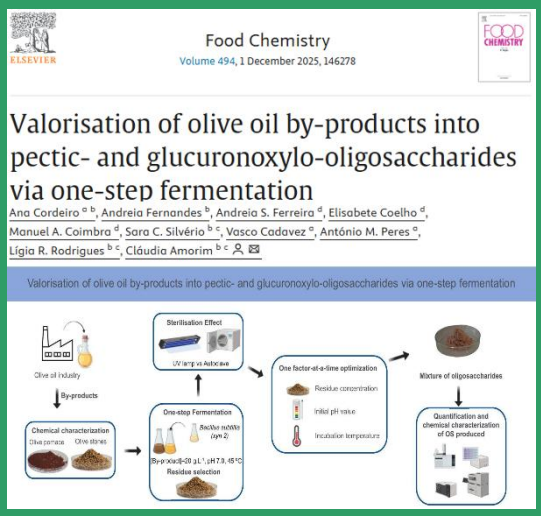




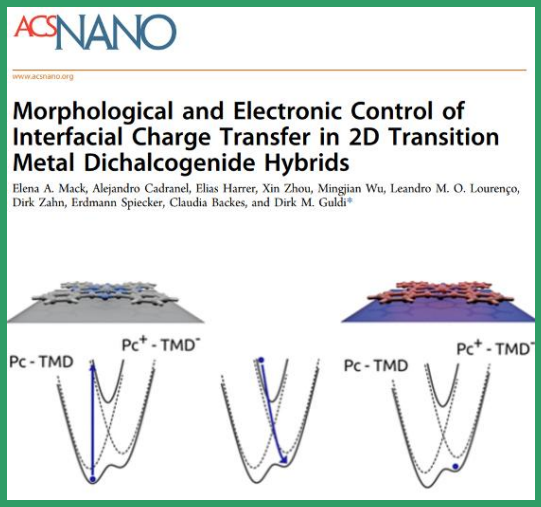
ProAqua+- Desenvolvimento de materiais multifuncionais para biofiltros em aquacultura: estabelecendo novos padrões de qualidade e sustentabilidade. CENTRO2030-FEDER-02594500AVISO: CENTRO2030-2024-76
Coordinated by Professor **Manuel A. Coimbra**

PUBLICATIONS

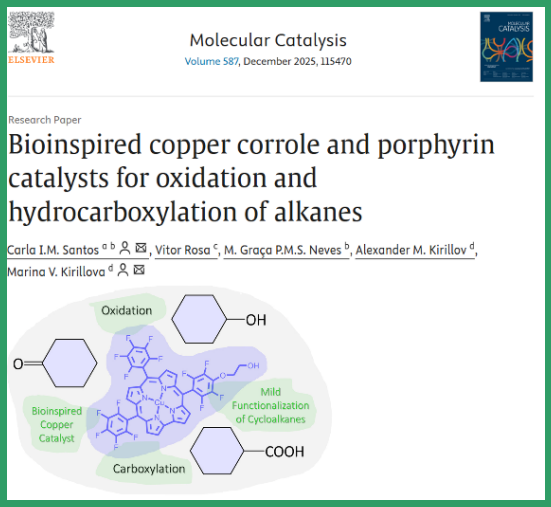
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