

Subject: Joint webinar Division de Chimie du Solide – SCF / Division of Solid State and Materials Chemistry – EuChemS. Time: Thursday 12th February 2026 01:30 PM Paris-time

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[fr.zoom.us/j/85618855497?pwd=LtgDtLGZFzziSM2Z0nMpKaTgaSPEQw.1](https://univ-nantes-fr.zoom.us/j/85618855497?pwd=LtgDtLGZFzziSM2Z0nMpKaTgaSPEQw.1)

ID de réunion: 856 1885 5497 /code: 720980



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Exploiting the electric response of materials for improved analytical performance

We introduce a new method for solid-phase reversible immobilization of biomolecules based on internal, electric control of surface charge of the solid phase. Unlike traditional solid-phase extraction (SPE) approaches, that use solvent composition to select for affinity and often require multiple solvent changes and time-consuming protocols, our system leverage materials whose surface charge and electric double layer can be dynamically adjusted by applying an external voltage. This allows direct, online control of biomolecule adsorption and desorption rates. Furthermore, our results show that other properties of the material, beyond surface charge can be manipulated to obtain significant gains in the selectivity and yield of the reaction. We will discuss how the degree of cross-linking and the specific functional groups present on the surface significantly enhance the selectivity and yield of

the extraction process. This electrically driven strategy enables rapid, selective, and high-yield biomolecule separation without the need for complex solvent gradients, allowing more streamlined and effective workflows in bioanalytical and preparative applications.