WHY VOLTAMMETRY?

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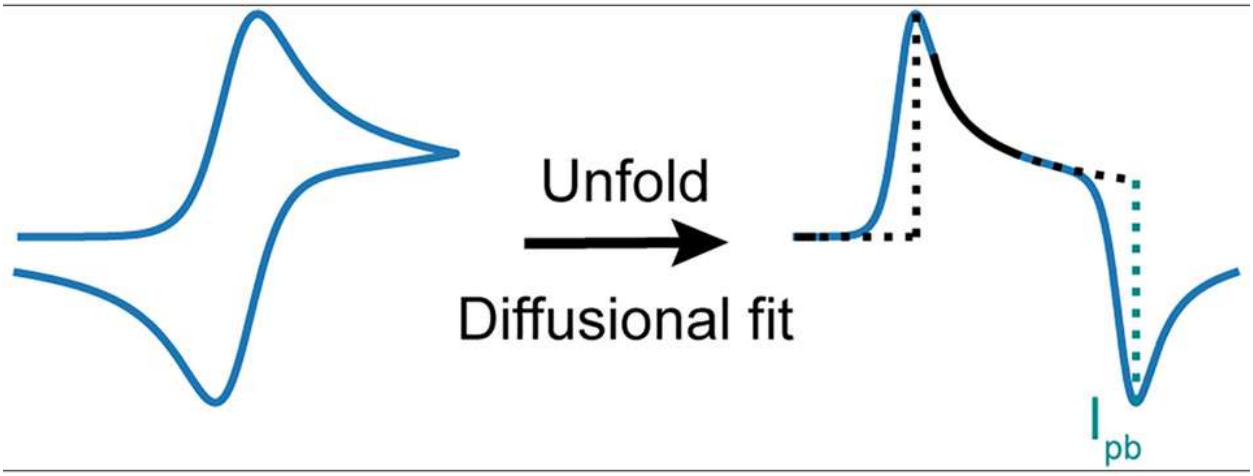
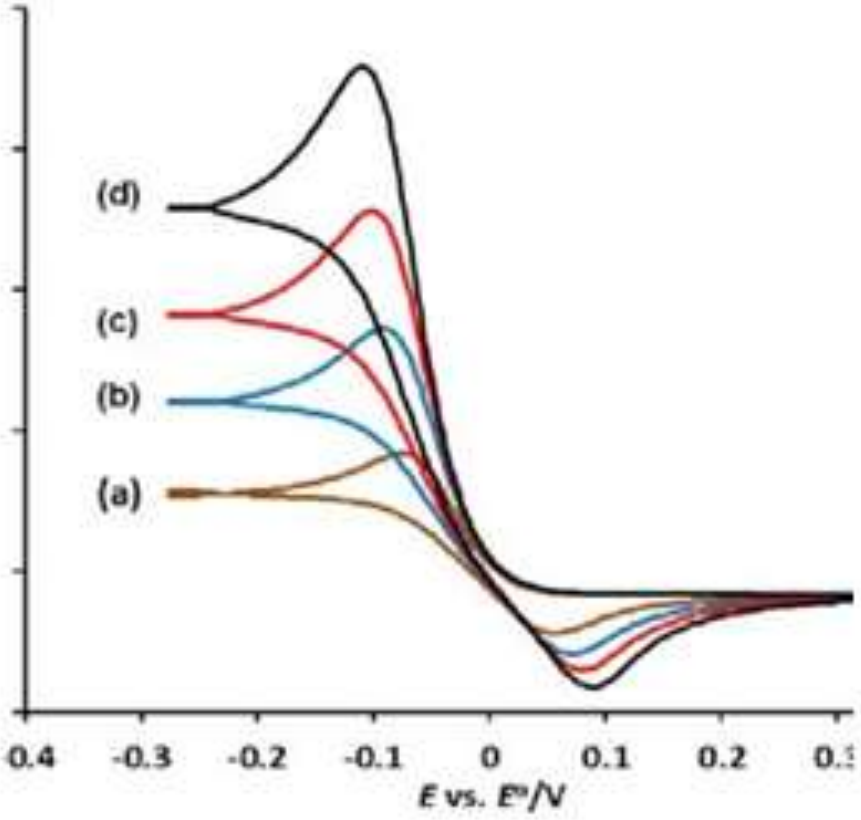
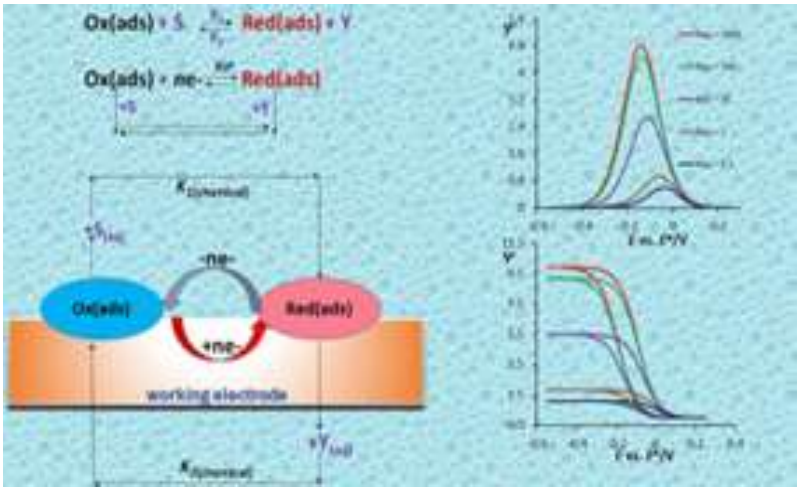
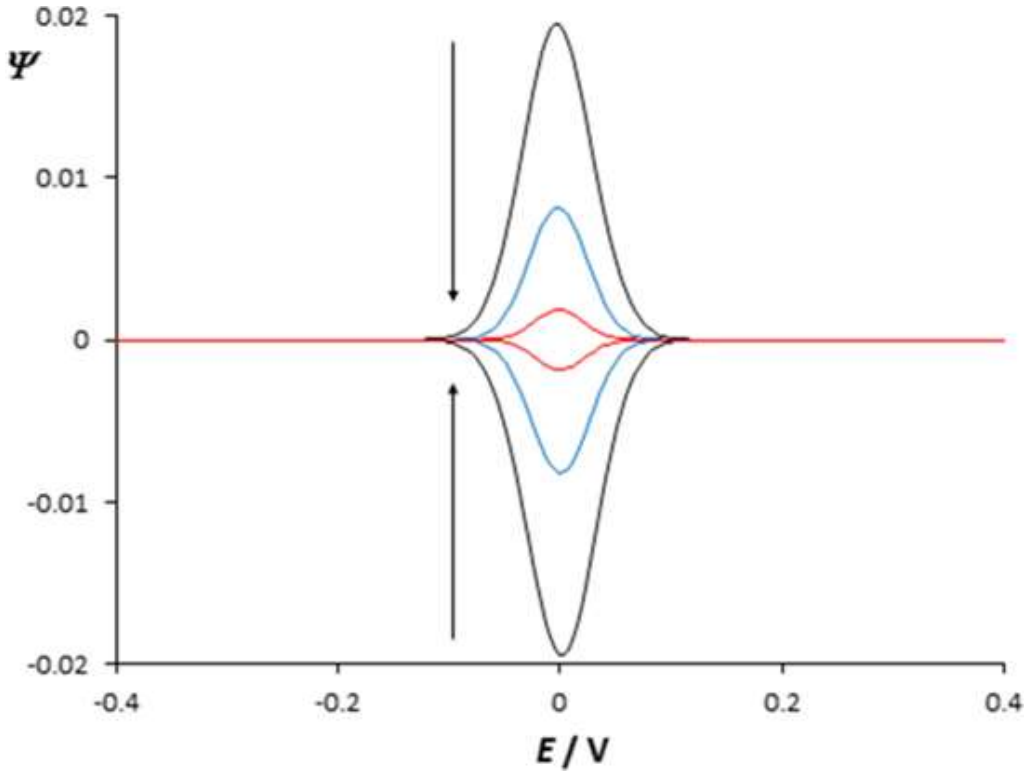
Abstract

Voltammetry represents one of the most versatile and powerful experimental techniques in modern electrochemistry, widely applied in analytical chemistry, biochemistry, environmental science, and materials research. The method enables direct investigation of electron-transfer processes at electrode interfaces by monitoring current responses as a function of applied potential. This provides valuable information about redox potentials, reaction mechanisms, kinetics, adsorption phenomena and diffusion properties of electroactive species. One of the major advantages of voltammetry is its high sensitivity, relatively simple instrumentation, and ability to analyze complex chemical and biological systems in real time. Over the past decades, significant theoretical and methodological developments have expanded the capabilities of voltammetric techniques, allowing detailed mechanistic interpretation of catalytic, adsorption, and multi-step redox reactions. As a result, voltammetry has become an indispensable tool for studying electrochemical processes, developing biosensors, and exploring redox-active molecules in both fundamental and applied research. In this work we give short explanations about redox systems of various nature whose electrochemical transformation can be studied by voltammetric techniques.

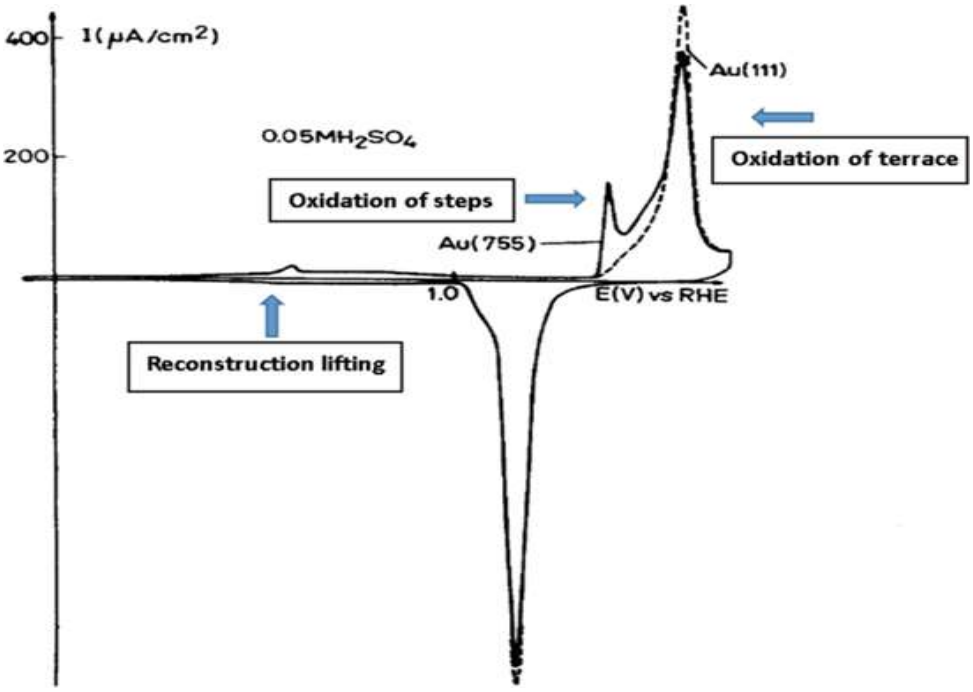

Unfold
Diffusional fit
I_{pb}


(d)
(c)
(b)
(a)
0.4
-0.3
-0.2
-0.1
0
0.1
0.2
E vs. E°/V

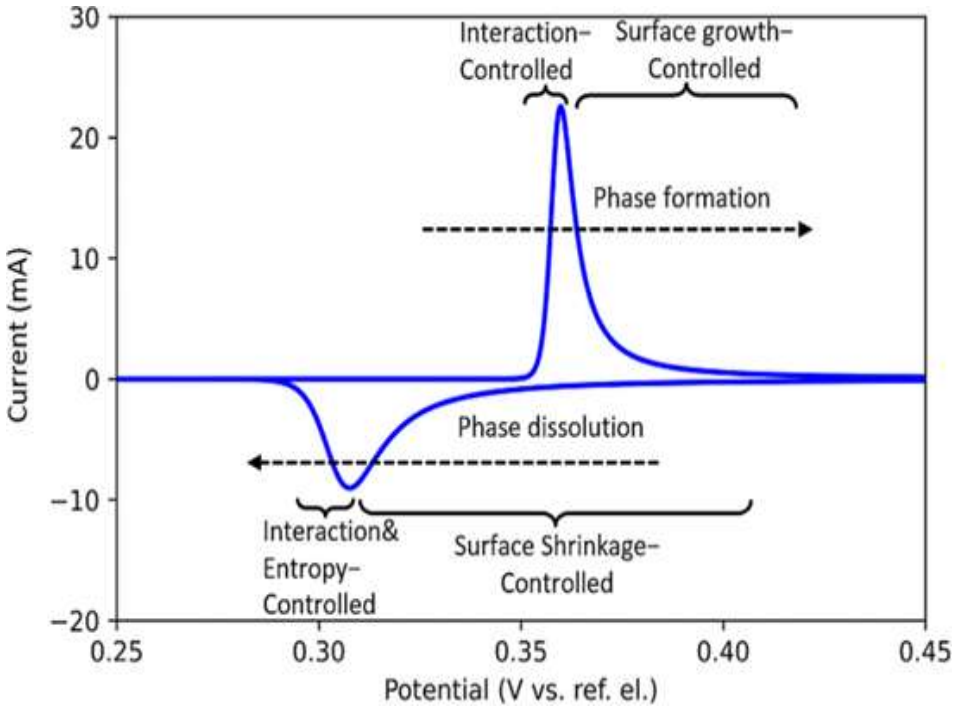




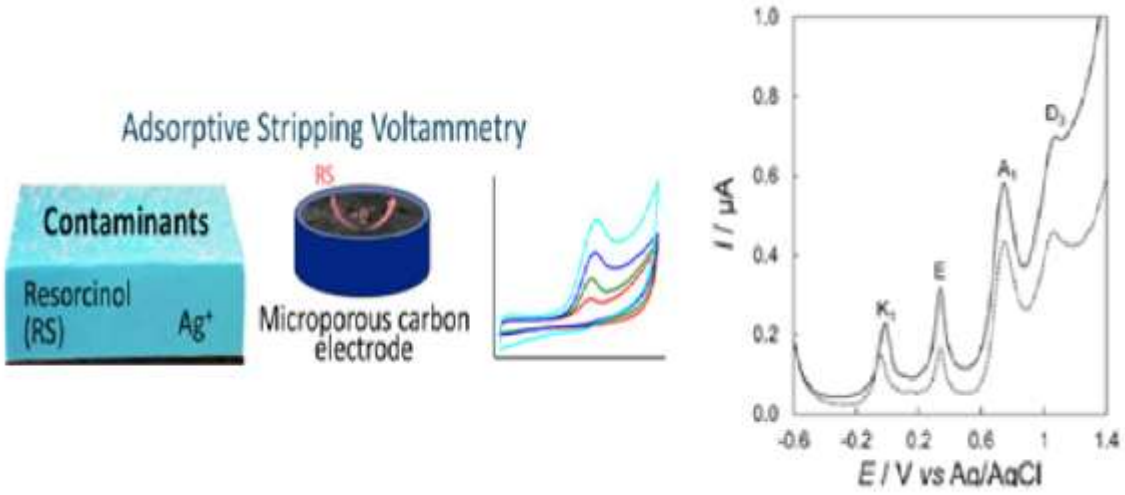
Protein-film voltammetry



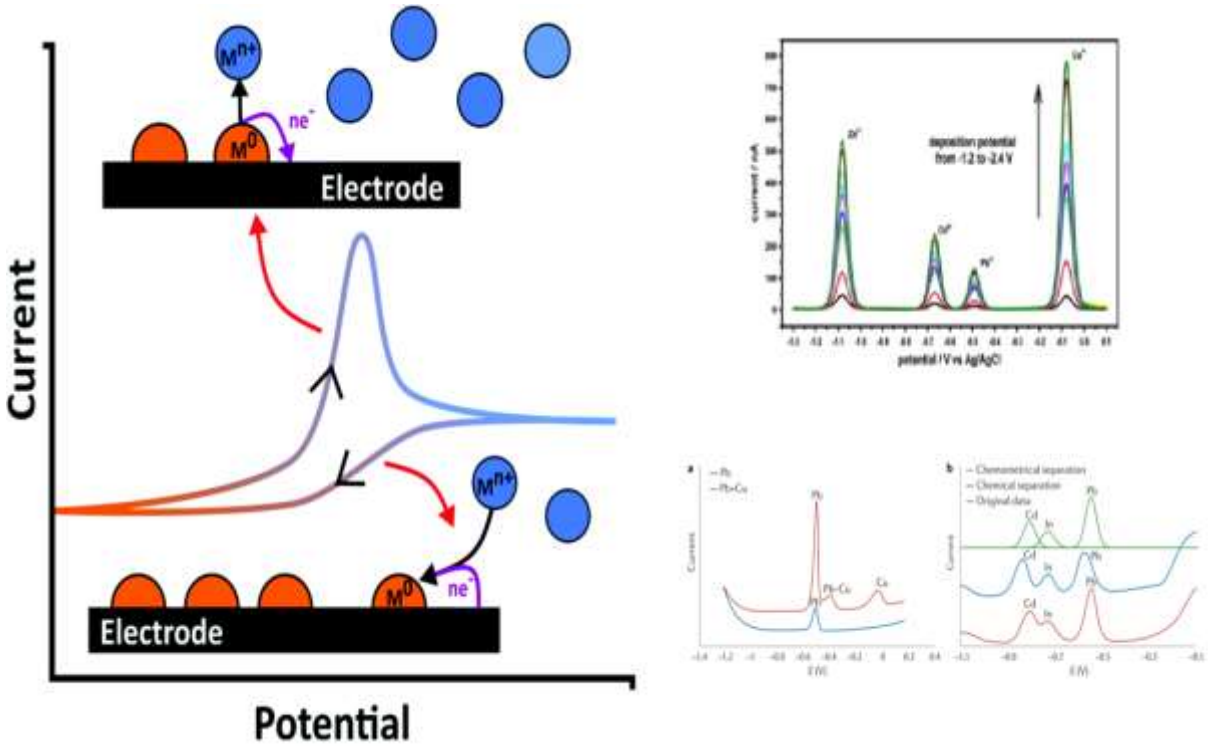
Crystallization in voltammetry



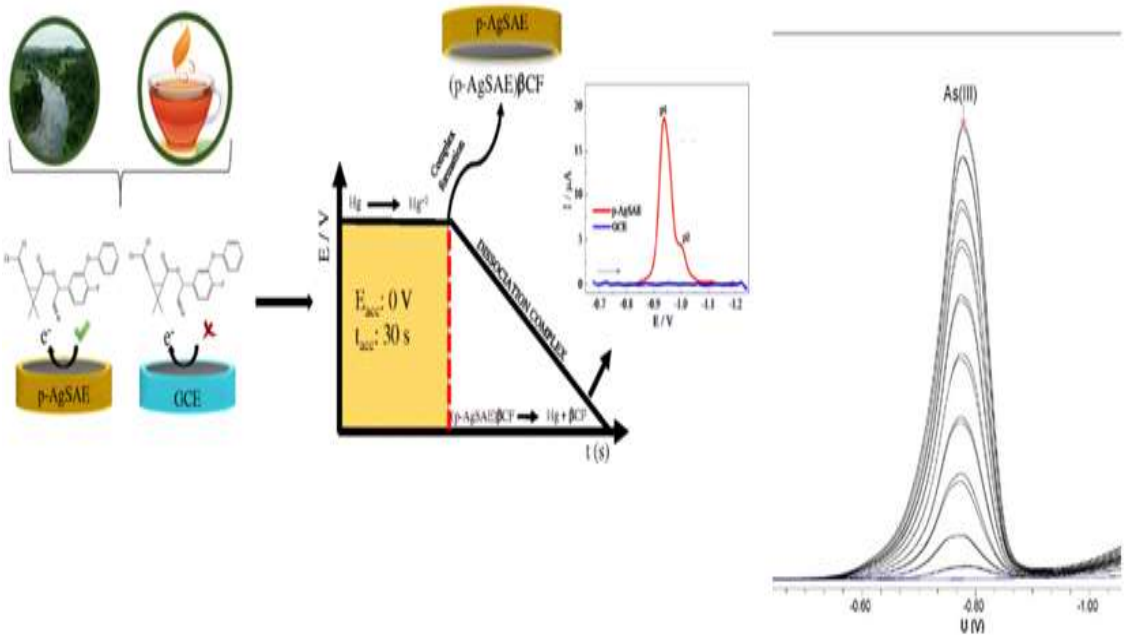
Solid State Voltammetry



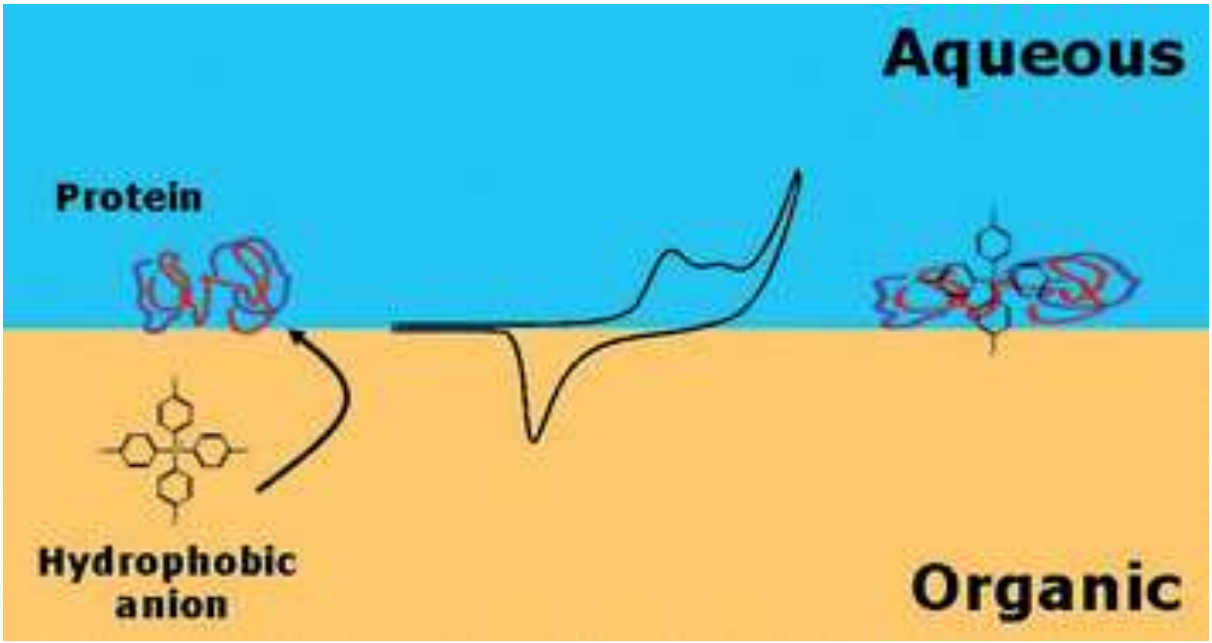
Adsorptive stripping voltammetry



Anodic Stripping Voltammetry



Cathodic Stripping Voltammetry



Voltammetry of Ion transfer across liquid-liquid interface

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