Abstract of the Invention

A nanostructured composite film comprising a plurality of nanostructured elements, wherein the nanostructured elements are either two-component sub-microscopic structures comprised of whiskers conformally coated with a conducting, preferentially catalytically active material or one component sub-microscopic structures comprised of a conducting, preferentially catalytically active material, such that the nanostructured elements are embedded in an encapsulant, wherein the encapsulant can be a solid electrolyte. The composite film can be used as an electrode membrance, in an electrochemical cell or an analyte sensor.

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