Nafion in a film form can act as a solid polymer electrolyte (SPE) when confined to an electrode surface. The approach has also enabled function as electrochemical sensors in aqueous solutions with the absence of supporting electrolytes. It is known that a major factor in the electrochemical responses of species in Nation, is the ionic conductivity of the coatings. This is in turn dependent on their water content. One situation in which the films would remain hydrated, would be the electroanalysis of species in either highly organic solvents or non-aqueous media, as the hydrophobicity of the media would ensure that the water remained within the Nafion.

The work has been investigated electrochemical and electroanalytical possibilities of using Nafion-coated electrodes in a viscous media such edible oils and organic solvents without any form of sample modification or dilution by conducting solvents. Voltammetry of ferrocene and a phenolic antioxidant (tetra-butylhydroquinone) at the modified electrode and electrochemistry of hexaamine ruthenium (II)-incorporated Nafion electrodes are reported.