

Conformational studies of Tau protein

José O. Esteves-Villanueva, and Sanela Martić*

Department of Chemistry, Oakland University
2200 N. Squirrel Road, Rochester, Michigan 48309

Tau protein is linked to neurodegenerative diseases, correspondingly termed tauopathies [1]. In neuronal cells, tau stabilizes the microtubules, but when tau gets hyperphosphorylated it dissociates from microtubules and aggregates into toxic paired helical filaments [2]. Hence, understanding tau conformation and aggregation is critical, and is typically achieved by spectroscopic and microscopy techniques. We aim to monitor tau conformational changes and early-onset of tau aggregation by electrochemical methods. The electrochemical impedance spectroscopy (EIS) and cyclic voltammetry (CV) were used to probe the tau protein orientation and conformational changes on surfaces as a function of external stimuli. We monitored the electrochemical properties of the tau films under variety of conditions. The electrochemical data on tau aggregation was compared to the solution-based experiments (UV-vis, fluorescence, CD), and these results will be presented and discussed.

- 1) Martin, K.; Steinberg, T.; Cooley, L.; Gee, K.; Beechem, J., Patton, W. *Proteomics* **2003**, 3, 1244-1255
- 2) Wilner, O. I.; Guidotti, C.; Wieckowska, A.; Gill, R.; Willner, I. *Chem. – Eur. J.* **2008**, 14, 7774-7781