Evaluation of the Spectral Properties of Luminescent Conjugated Oligothiophenes (LCOs)

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Luminescent conjugated oligothiophenes (LCOs) are new fluorescent agents \cite{Aslund2009} which are further developed within the LUPAS (Luminescent Polymers for in vivo imaging of Amyloid Signatures) EC-FP7-Project (www.lupas-amyloid.eu). They are targeted towards pathological protein deposits in Alzheimer's and prion diseases. Due to their flexible thiophene backbone they change their spectral properties depending on the structure they bind to. We are currently testing several LCOs with regard to their application in long-term in vivo imaging of abnormal protein deposits using 2-photon microscopy in mouse models of cerebral amyloidosis and tauopathies. The objective is to find LCOs that can be used for long-term monitoring of amyloid deposits to understand the progression of Alzheimer's pathology.

To be able to easily evaluate and compare the spectral properties of LCOs in a larger amount of datasets from different sources there was a demand for image analysis tools that can be used to visualise small shifts in spectral maxima or spectral similarity. Here we present a set of ImageJ based tools that can be used for that purpose.

\cite{Aslund2009} Aslund et al., ACS Chem Biol, 2009; 4(8):673-84