Silk and cotton yarns were purchase from a local fabric store and were dyed utilizing standard protocols from literature. Yarn junctions were treated with EMIM Ac which had been analyzed for adventicious water (by Karl Fischer titrations) and residual acetic acid (by acid/base titrations). Yarns were taped to an aluminum plate and placed in a glove box on a large aluminum block preheated to 60 ^{o}C. Prior to welding experiments, a small vial of EMIM Ac and a glass microliter syringe were also preheated to 60 ^{o}C (utilizing the same large aluminum block). Junctions were each treated with 2.0 µL of IL (delivered dropwise) for the prescribed time. IL was removed by reconstitution (immediately after treatment) in either methanol (silk junctions) or double distilled water (cotton junctions) for several hours. Samples were gently dried in an oven at 60 ^{o}C overnight prior to imaging. After top down imaging (by SEM and CFM), samples were potted in epoxy and microtomed utilizing a RMC Powertome fitted with a diamond knife to obtain samples for cross sectional imaging. Top down SEM images were obtained utilizing a JEOL JSM-6360LV instrument and after sputter coating each junction with several nm of gold. Spectromicroscopic CFM imaging (top down and cross sectional) was conducted with a Nikon C2 confocal microscope outfitted with a spectral detector. Images were collected during sequential illumination with 408 nm and 488 nm lasers, respectively. Fluorescence from DCCH and DTAF chromophores was distinguished and quantified by monitoring the spectral region from 440 nm to 600 nm at 5 nm resolution during illumination with each laser. Cross talk and bleed through fluorescence was eliminated (separated) by linearly unmixing spectral data. The unmixing process utilized reference spectra collected for each chromophore/laser combination in a separate control experiment.