



Figure 1: Concept for the phthalocyanine based SOSIP-SHJs. Anchoring of the tetra-diphosphonate **1** on oxides (step 1) is followed by disulfide reduction with 1,4-dithiothreitol (DTT) to produce reactive thiols on the surface (step 2). The resulting thiolate then attack the disulfides in **2** to initiate ring-opening disulfide exchange polymerization (step 3). To add a co-axial stack for the transport of electrons, the benzaldehyde hydrazide will be removed and replaced with, e.g., electron-donating molecules such as phthalocyanine (step 4). A) Schematic representation of NDI-phthalocyanine/porphyrins SOSIP with oriented multicoloured antiparallel redox gradient (OMARG). B) Schematic representation of NDI-based SOSIP with phthalocyanine-fullerene dyads as lateral multiple-channel.