mk-STM study of Cu$_{0.2}$Bi$_2$Se$_3$ with W and Nb Tips RAMI DANA, WAN-TING LIAO, University of Maryland, IRENEUSZ MIOTKOWSKI, YONG P. CHEN, Purdue University, MICHAEL DREYER, University of Maryland — The Cu intercalated Bi$_2$Se$_3$ is predicted to be a time-reversal invariant topological superconductor with Majorana bound state in the vortex core. The samples are characterized by intrinsic inhomogeneity and disorder. Using mk-STM, a variety of high resolution superconducting gaps and sub-gap structures were observed. Our data from SIN and SIS junctions, using W and Nb tips on Cu$_{0.2}$Bi$_2$Se$_3$ and while applying of a magnetic field will be discussed in details.