Superconducting properties of the hexagonal layered molybdenum carbide $\eta$-Mo$_3$C$_2$ K. YAMAURA, Q. HUANG, M. AKAISHI, E. TAKAYAMA-MUROMACHI, National Institute for Materials Science, Japan — Superconductivity of $\eta$-Mo$_3$C$_2$ ($T_c$=8.5K) was reported in 1960s, while detailed superconducting and structure properties remained uncertain probably because those were complicated somewhat by carbon non-stoichiometry, partially thermal decomposition, and so on. Recently, we found the degree of problems is fairly reduced by employing high-pressure method, resulting in a distinct sample quality-improvement, which allowed us to conduct neutron diffraction, magnetic susceptibility, and specific-heat measurements on a polycrystalline form of $\eta$-Mo$_3$C$_2$ [1]. A significant layered character was found in the structure, which comprises edge-sharing CMo$_6$ octahedra sheets and $\sim$50% carbon occupied blocks. Magnetic characterization revealed the Ginzburg-Landau parameter of $\eta$-Mo$_3$C$_2$ is $\sim$26, which is close to that for the comparable $T_c$ compound Li$_2$Pd$_3$B ($\sim$21), but less than a half of that for MgCNi$_3$ ($\sim$54).