Chelation of metal complex in tungsten passivation/corrosion by hydrogen peroxide - J. Lee, D. Kang, J. La, I. Lee (Cheil Industries), and B. Choi (Chemistry Department, Kyunghee University)

X-ray diffraction and potentiodynzmic polarization studies have been carried out on the tungsten film corrosion character of propylenediaminetetraacetic acid (PDTA) and ethylenediaminetetraacetic acid (EDTA) of iron, manganese, silver in acid solution. Generally, tungsten's passivation is main reaction under pH 4. However, hydrogen peroxide oxidizer conducting the corrosion or etching reaction under pH 4. It is different passivation/corrosion reaction from propylenediaminetetraacetic acid–iron complex/hydrogen peroxide system and ethylenediaminetetraacetic acid-metal/hydrogen peroxide. Propylenediaminetetraacetic aicd-iron complex is chelate with tungsten oxide and hydrogen peroxide's oxidation ability decrease. Because hydrogen peroxide degradation is stabilized by propylenediametetraacetic acid-iron. Therefore, propylenediametetraacetic acid-metal complex conduct tungsten out passivation. Ethylenediametetraacetic acid-metal and metal compound is increase up the hydrogen peroxide radical formation rate and conduct tungsten out corrosion by Fenton chemistry.