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Graphene Synthesis on Single Crystal Copper Foil

Generally, graphene is synthesized by CVD method using a polycrystalline copper thin film as a catalytic metal. Copper films are preferred because of their low cost, low carbon content and relatively high melting temperatures.
However, it is known that graphene synthesized from polycrystalline copper thin films has many wrinkles and defects. This is because the surface of the copper film is composed of crystal grains of various planes. Recently, graphene synthesis has been attempted on the surface of monocrystalline copper since there is no grain boundary. However, monocrystalline copper is very expensive in cost, and hard to obtain. In this study, we investigated the effect of oxygen on monocrystallization of polycrystal copper film using SEM, Raman, XPD, XRD and SIMS. Single crystal graphene was synthesized and the I-V curve of FET was measured to characterize the graphene.

References

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Figures

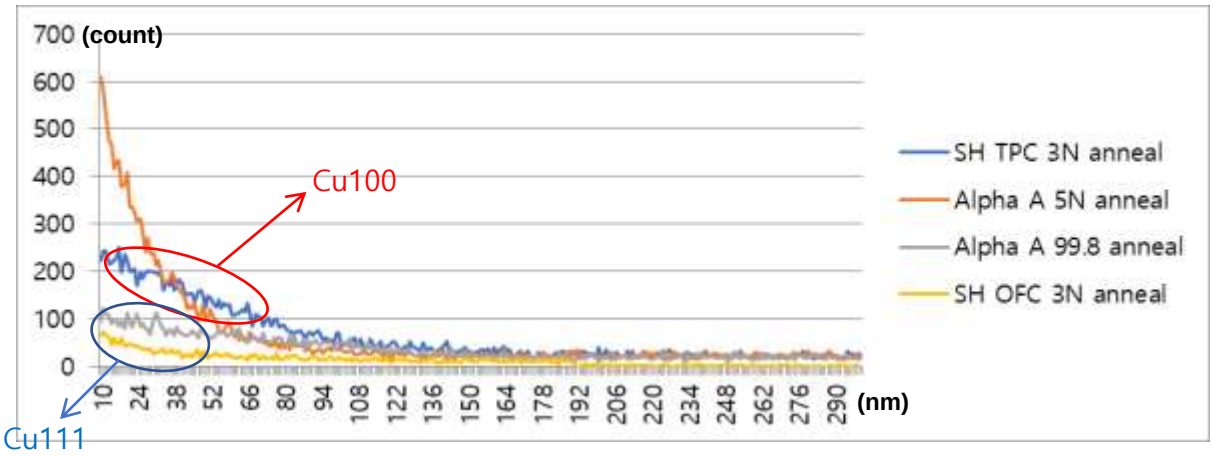

Figure 1: Oxygen content in annealing Cu foil (TOF-SIMS)

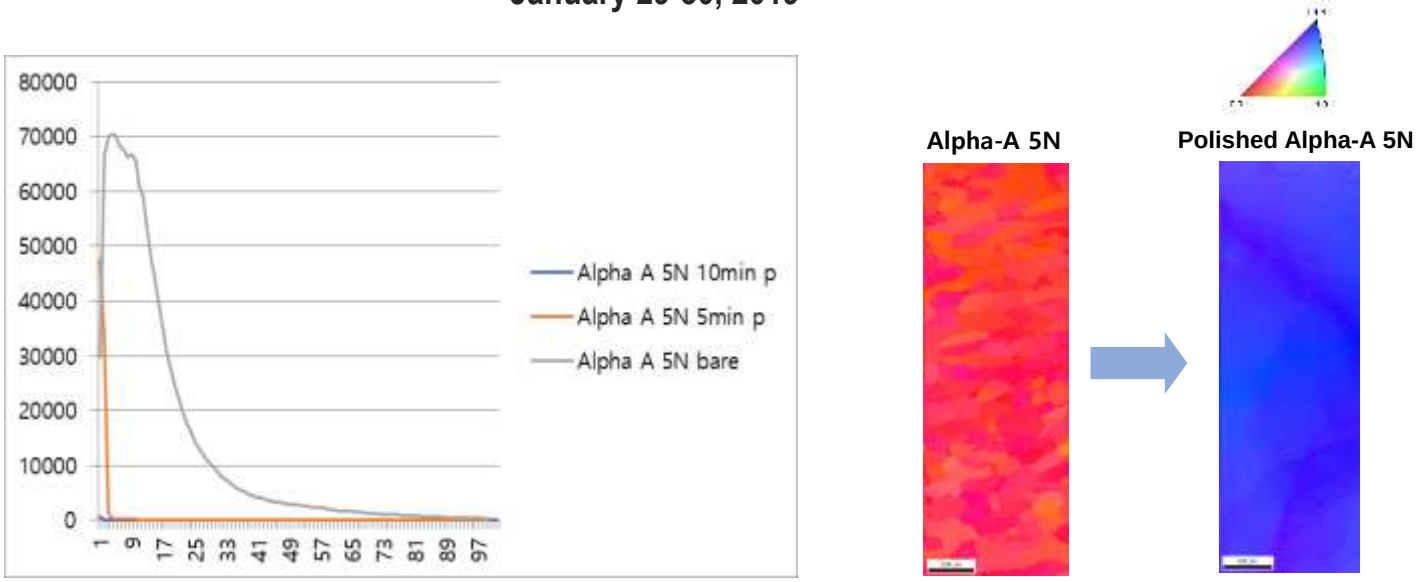

Figure 2: (a) Oxygen content in polished Cu foil (TOF-SIMS) (b) phase orientation of annealing Cu foils (EBSD)