윤활조건에 따른 Mo-Cu-N 코팅의 마모특성에 관한 연구

(Study of anti wear resistance of Mo-Cu-N coatings deposited by reactive magnetron sputtering process with single alloying target)

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초 록: In this study, it has been tried to make the single Mo-Cu alloying targets with the Cu showing the best surface hardness that was determined by investigation on the coatings with the double target process. The single alloying targets were prepared by powder metallurgy methods such as mechanical alloying and spark plasma sintering. The nanocomposite coatings were prepared by reactive magnetron sputtering process with the single alloying targets in Ar+N_2atmosphere. The microstructure changes of the Mo-Cu-N coatings with diverse Cu contents were investigated by using XRD, SEM and EDS. The mechanical properties of the coatings were evaluated by using nano-indentor, scratch test, and ball on disc methods. Especially, the coated samples were tested by using various lubricating oil to compare the property of anti wear-resistance. In this study, the nano-composite MoN-Cu coatings prepared using an alloying target was eventually compared with the coatings from the multiple targets.

Anodic formation of TiO_2 nanoporous structures at high temperature in a glycerol/phosphate electrolyte

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초 록: Anodic TiO2 nanostructures have wide applications due to their various functional properties such as wide band-gap, chemical stability, and anti-corrosiveness. In order to enhance the properties, several approaches to fabricate TiO2 structures have been developed. Especially, TiO2 nanotube arrays prepared by anodization in a fluoride electrolyte show impressive properties for dye sensitized solar cells1 and photocatalyst.

In this presentation, we introduce new types of TiO2 nanostructures beyond TiO2 nanotubes that are fabricated by anodization at high temperature in a glycerol/phosphate electrolyte. We show that depending on the anodization parameters different self-organized morphologies - of highly aligned, high aspect ratio oxide structures can be formed. Critical factor for growth and the use for dye sensitized solar cells and photocatalyst will be discussed.