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## Formation of Diamond/Mo/Ni Multi-Layer on Steel Substrate

강 표면의 다이아몬드/몰리브데늄/니켈 복합층의 생성

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### Abstract

Diamond/Mo/Ni multi-layers on SKH-51 steel substrate was prepared to improve the abrasive wear resistance of a tool and die by a commercial chemical vapor deposition unit and electro-plating. The diamond after 7 hour deposition had cubo-octahedral structure with 2~5 $\mu$ m grains. The existence of non-ferrous metals such as chromium, nickel and molybdenum between diamond and SKH-51 substrate results in forming higher quality of diamond layer by retarding carbon diffusion in the diamond layer during deposition, and also improving hardness and wear resistance. Surface cracks on the film was sometimes observed by the difference of by the thermal expansion coefficients between the steel substrate and the deposited layers during cooling.