COMPOSITE OF POLYETHER ETHER KETONE AND POLYIMIDE KAPTON DEPOSITED WITH CONDUCTIVE DIAMOND CONSIDERING SPACE ENVIRONMENTAL EFFECT

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GLOSSARY
PEEK, KAPTON, Conductive diamond, laminated composite, space environment

ABSTRACT
Composite sheet using PEEK and Polyimide KAPTON coated with the conductive diamond is a best polymeric material to protect harsh space environment. Outer surface faced with the space environment is coated with the conductive diamond using doped boron and the inside surface is coated silver coloured metallic material such as aluminium to reflect the solar heat and to delete electrostatic charging on the surface of spacecraft. This design is useful to protect space structure not only the form of thin sheet cover but also adaptive formations of bulky plate.

1. INTRODUCTION
Diamond is a strong and highly durable material on ground among carbon allotrope. Boron is a useful material to apply electrical conductivity and high resistance against the aggressive environment therefore diamond doped with boron has the electrical conductivity with high durability. It is able to grow a nano-crystalline diamond in the chemical vacuum deposition using the surface wave plasma (SWP) of 300 ℃ for lower than melting point of PEEK. Even though the glass transition temperature (Tg) is lower than the temperaure of process, totally the property of PEEK against using in space environments is not highly associated with the expected performance such as hardness, visual transition, volumetric change etc. The deposited thickness is micro-meter unit that is well-operated to protect harsh space environments such as atomic oxygen, plasma ions, electrons, UV etc. as much as the indium tin oxide or other coatings. This diamond has also treated with boron doping for applying the electrical conductivity up to 10^2 Ω/□ sufficiently able to avoid static charging on surface of structure. Formations of covering on the structure for protective functions are included two types of progress. One is simply worked by a common process of covering on the surface during the final stage of assembly, the other is correctly fitted on each structural component required the protective functions alike amour blocks.

2. HISTORY OF MATERIALS
Diamond is a long-time developed material for the space program used in space environments. However unfortunately, it is not easily find the practical and useful achievements for real and actual applications.

CONCLUSION
Boron doped diamond coated on PEEK or thermally stable polymer expected the satisfaction of performances included transmission, conductivity, strength, and anti-corrosive function.

REFERENCES