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## Development of heat sink coating solution and process containing MWCNT with thermal conductivity of 201.9W/mK and super hydrophobic surface

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Heat sink is heat exchanger that transfers the heat from electronic device. When thermal radiation is reduced by dust accumulation failure. To solve the dust accumulation phenomena on heat sink, super hydrophobic surface and high thermal conductivity must be applied on heat sink surface for implementing self-cleaning surface. In this study, the coating solution and process which satisfy the high thermal conductivity by utilizing the percolation threshold phenomenon and super hydrophobic surface with self-cleaning function by utilizing clustering and tangling phenomenon of MWCNT are developed. Coating solution is prepared on the basis of MWCNT and spray coated on aluminum specimen and then cured at 150 °C to produce a coating film. Each sample was analyzed by means of XPS to determine chemical bonds of inorganic binder, APTES, MWCNT. Clustering phenomenon of MWCNT was observed by using SEM analysis. The contact angle measurement result shows that the super hydrophobic surface above 160 ° and for the thermal conductivity measurement. To calculate thermal conductivity, density, specific heat and thermal diffusivity are measured. And then identified the coating film has high thermal conductivity of 201.9 W/m·K.

## Biography

Juyoung Kim has completed his Master's Degree from Hanyang University and has participated in Korea Institute of Industrial Technology (KITECH) as a student researcher.

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