Analysis of Antifogging Materials By Nanoparticles – A Review

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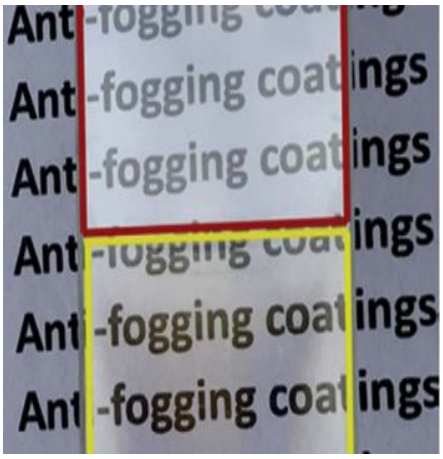
Abstract- *The Analysis is to study about the anti-fogging glass by using nanoparticles. Anti-fogging coatings are very attractive for many applications. In these analysis, we apply the anti-fogging coating in the windshield glasses to reduce the fog formation in windshield glasses. In this study coatings are prepared by colloidal solution of nanoparticles and colloidal solution is coated by dip coating method. The thickness of the coatings are controlled by the number of dipping cycles. The colloidal solutions has an constituents of silica oxide,tetramethyl ammonium bromide,aluminium isoproxide and tetramethyl ammonium hydroxide*

Keywords- Zincoxide , silica nanoparticles.

I. INTRODUCTION

Road visibility in passenger vehicle is major concern for the vehicle manufactures and safety engineers. One of the major problem affects the road visibility is water film (fog) that forms on the front glass during winter times and disturb the drivers visibility. Materials with both anti-fogging and anti-reflective properties can reduce water condensation on the surfaces as well as increase light transmission. Such materials are used in windshields to increase the light transmission. Nano-particles such as silica and ZnO are frequently used in preparing superhydrophilic and nano textured surfaces to introduce antifogging propertiestt. The wettability of coatings was studied by testing the water contact angle



SILICA

Silicon di oxide is a natural compound of silicon and oxygen found mostly in sand. Silica is used as additive for rubber and it is used as strengthening agent for composites. Silica is used as primary integrant for manufacturing glasses. Its melting points is 1600 degree C and boiling point is 2230 degree C.

ZINC OXIDE

Zinc oxide is insoluble in water but it soluble in most acids. Zno has a property of good transparent. It has high heat capacity and heat conductivity. It is used in additive numerous of plastic, ceramic and glass .zinc oxide is used in the application of transparent electrodes

PREPARATION AND COATING

The coating of colloidal nano particles on glass was prepared by dipping method. The dipping method is done in the procedure of ultrasonic washing in 10M alkali for 30min, Finally rising in distilled water for 30M, Distilled water flushing of glass slides for few seconds. Finally glass is dipped in to colloidal solution of nano particles.

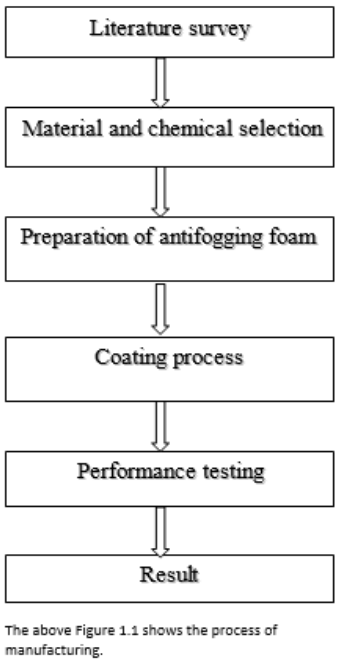


Fig1.2 Process Of Manufacturing

The above Figure 1.1 shows the process of manufacturing.

MATERIALS AND CHEMICALS

Colloidal silica (30 percentage sio2 in H20) , tetramethyl ammonium hydroxide (25 percent) and aluminium Isopropoxide (98percent) and Zinc oxide nano powder.

Li Cao, Hong Hao, (2017)

In this journal, We study about the anti-fogging and anti reflective coating by using nano colloidal solution. Nano colloidal solutions are prepared by colloidal silica and nano zeolite solution The glass is coated by dipping method. The glass is dipped in the colloidal solution for several seconds. By using of silica the glass act as an antifogging agent. These coating help us in the change of temperature and humidity. More than a six month of period in the ambient condition there was no change in the property of anti fogging and anti reflective.

C.S. Thompson, R.A. Fleming (2015) In this journal, We study about the property of silica nanoparticle, Silica has a main properties of anti fogging characteristics. So silica has been used in the variety of coating applications and it is also helps to remove the double the amount of contaminated particles. Silica is also uses in self-cleaning agent The coats with silica have a high transparent surface.

M.Constantines, A.Apostol(2017) In this journal, We study about the mechanical properties of silica nanoparticles. The mechanical property of silica can be improved by the mixture of silica with epoxy nanocomposites. It increases the strength roughness and ductility of the silica. Increasing of the property of silica helps to remove the fog appears in winter season.

Xiaoying Lu, Zhen Wang(2011) In this journal, We study about the water ability is the important property for anti fogging and self-cleaning application. That property is available in silica nanoparticle, Which can be applied on the solar modules by dip coating method. In this applications use a multifunctional film composites silica nanoparticle. These multifunctional silica can be used in a solar module applications and also increase the power up to 2% in the total ratio of amount.

S.A.Turnage, K.A.Darling(2011) In this journal, We study about the mechanical behavior of nano properties in an extreme condition. The purpose to study is material ability with a high deformation rates without failure have an effect of effective role in many applications. The behavior can be tested in the extreme conditions.

Atikur Rahman, Christope Clante(2017) In this journal, We study about the ability of anti fogging in model nano textures. These property was essential to survival of animal. In these all cases combining of small feature size and optimal shape to provide exceptional surface properties. It generates an anti fogging efficiency which is close to unity.

II. CONCLUSION

In this study, We analysis the antifogging glass nanoparticles by using dip coating method. If these analysis will attain a positive result that helps to give a good visibility in windshield glass in winter season.

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