

(12) PATENT APPLICATION PUBLICATION

(21) Application No.201631040277 A

(19) INDIA

(22) Date of filing of Application :24/11/2016

(43) Publication Date : 08/09/2023

(54) Title of the invention : TITANATE BASED SUPERHYDROPHOBIC COATING ON METAL/METAL ALLOY SURFACES AND METHODS OF MAKING THE SAME USING ION AND/OR ELECTRON IRRADIATION

(51) International classification	:B05D0005080000, C09D0005160000, B05D0001020000, C01B0013020000, G01N0013020000	(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY BHUBANESWAR Address of Applicant :Indian Institute Of Technology Bhubaneswar, Samantapuri, Bhubaneswar-751013, Orissa, India. Orissa India
(31) Priority Document No	:NA	(72)Name of Inventor :
(32) Priority Date	:NA	1)Dr. Shyamal Chatterjee
(33) Name of priority country	:NA	2)Dr. Kisor K. Sahu
(86) International Application No	:PCT//	3)Satyanarayan Dhal
Filing Date	:01/01/1900	4)Anil D. Pathak
(87) International Publication No	: NA	5)Soumyabrata Basak
(61) Patent of Addition to Application Number:	:NA	6)Shreeja Das
Filing Date	:NA	7)V. Sai Pranav
(62) Divisional to Application Number	:NA	
Filing Date	:NA	

(57) Abstract :

ABSTRACT TITLE: TITANATE BASED SUPERHYDROPHOBIC COATING ON METAL/METAL ALLOY SURFACES AND METHODS OF MAKING THE SAME USING ION AND/OR ELECTRON IRRADIATION Wetting property of any surface determines the interaction of a liquid with the surface. Superhydrophobic surfaces are highly hydrophobic i.e., extremely difficult to wet. When a droplet of water is placed on a superhydrophobic surface the contact angles of a water droplet is equal or more than 150°. Most of the techniques involve to impart hydrophobicity on the surface involve complicated procedures and some of them are not suitable to small surfaces. Present invention provides for a metal/metal alloy surface having thereon a superhydrophobic coating comprising ion and/or electron irradiated titanate (HTNT), which optionally includes a buffer layer in-between the said metal/metal alloy surface and the titanate coating. Preferably said titanate-coated surface is annealed to heal any discontinuity in titanate and/or buffer layer and is optionally further coated with a protective polymer/organic coating. The claimed invention is more precise and controlled than the existing methods wherein the high energy transferred by the ions/electrons imparts better, controlled, targeted and homogeneous adhesion with the substrate and satisfies specific requirement in various applications such as conductor wire, heat exchanger, water containers, underwater ship and submarines parts, oil and gas well components etc. to name a few.

No. of Pages : 24 No. of Claims : 18