AERO PATENT MATRIX

INVENTING THE WORLD

JUNE 2024

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MLR INSTITUTE OF TECHNLOGY

DEPARTMENT OF AERONAUTICAL ENGINEERING

“AERO PATENT MATRIX”

2024

MARRI LAXMAN REDDY
GROUP OF INSTITUTIONS
MLR
Institute of Technology

Institute Vision:

Promote academic excellence, research, Innovation, and entrepreneurial skills to produce graduates with human values and leadership qualities to serve the nation

Institute Mission:

Provide student-centric education and training on cutting-edge technologies to make the students globally competitive and socially responsible citizens.

Create an environment to strengthen the research, innovation and entrepreneurship to solve societal problems.

Vision of the Department:

To be a centre of excellence in Aeronautical engineering with emphasis on Research & Innovation to serve the needs of industry with human values to build strong nation. The department's vision is derived from the institute vision and it vouches to help the institute in fulfilling its vision by becoming a center of excellence in Aeronautical Engineering.

Mission of the Department:

The mission statements are the action statements; the department intends to implement in fulfilling its vision. The key components are quality oriented technical education, multidisciplinary skills and Research & Innovation activities with human values.

M1. Provide quality oriented education, well-grounded in the fundamental principles of Aeronautical Engineering.

M2. Consistently produce top quality Aeronautical engineers with core and multidisciplinary skills, who can become ace leaders and successful entrepreneurs with human values.

M3. Continuously strive for knowledge; undertake Research and Innovation that will contribute to the industrial development of the nation.

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

ORIGINAL
क्रम सं/ Serial No. : 181474

पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 425343-001

तारीख / Date : 31/07/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *VEGETABLE CUTTING GUARD* से संबंधित है, का पंजीकरण, श्रेणी 31-00 में 1.Mlr Institute Of Technology 2. M Satyanarayana Gupta 3.Bandewar Sahithi के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 31-00 in respect of the application of such design to *VEGETABLE CUTTING GUARD* in the name of 1.Mlr Institute Of Technology 2. M Satyanarayana Gupta 3.Bandewar Sahithi.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि :
Date of Issue : 27/09/2024

उन्नत की ओर

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :24/04/2024
(21) Application No.202441032331 A
(43) Publication Date : 03/05/2024

(54) Title of the invention : NATURAL COMPOSITE COMPOSED OF CASHEW NUT SHELL LIQUID AND COIR FIBER

(51) International classification :B64D0013060000, G06F0030150000, C10N0030080000, C08J0005240000, C08J0005000000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The aerospace sector has consistently been at the forefront of technological advancement due to its stringent demands in challenging environments. These demands drive both academic and industrial sectors to innovate in high-performance materials and reliable manufacturing processes. The materials particularly intended for aircraft applications must have high thermal stability and thermal resistance, as well as lightweight, excellent mechanical qualities, and strong environmental resistance.Recently, the growing emphasis on sustainability, which has already garnered attention in various sectors like transportation, civil engineering, medicine, and packaging, has led to the emergence of eco-friendly materials and nanomaterials in the aerospace industry. The natural composites offer several benefits, such as reduced weight, improved fuel efficiency, lower emissions, and enhanced recyclability. The natural composites can be utilized in aircraft interiors, different wing and fuselage components, aircraft cabin floors, and some engine components. In our invention a natural composite material is proposed to replace the traditional material used in aviation.

No. of Pages : 10 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :24/04/2024

(21) Application No.202441032328 A
(43) Publication Date : 03/05/2024

(54) Title of the invention : AERIAL SOLAR SWEEPER

(51) International classification :H02S0040100000, F24S0040200000, B08B0001000000, F21S0009030000, F24F0008900000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
The UAV-based cleaning mechanism revolutionized solar panel maintenance by ingeniously combining oscillating microfiber strips and a water dripping system. Engineered with careful consideration of optimal characteristics, the microfiber strips effectively removed dust and dirt without damaging panel surfaces. The integrated water dripping system strategically wet the microfiber cloth, preventing dust resuspension for thorough cleaning. This innovative solution ensured maximum efficiency and lifespan of solar panels, offering a cutting-edge method for sustainable energy production.

No. of Pages : 11 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/10/2024

(21) Application No.202441082643 A
(43) Publication Date : 01/11/2024

(54) Title of the invention : WATER-CAN WITH MOUTH-PIECE

(51) International classification	:C02F0001280000, C04B0028040000, G06N0007010000, G06F0021310000, G06F0017100000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
Access to clean drinking water is a fundamental necessity for human survival, yet many major cities struggle with providing it. In places like Bengaluru, water is primarily supplied through expensive tankers due to scarcity. Households often rely on water cans, but these can be difficult to empty quickly due to air-locking. To address this issue, a new design includes an air vent to prevent air-locking and make the process more efficient. This innovation not only benefits households, but also has the potential to reduce water spillage when filling small jars. 4 Claims & 4 Figures

No. of Pages : 10 No. of Claims : 4

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

ORIGINAL
क्रम सं/ Serial No. : 181287

पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 425341-001

तारीख / Date : 31/07/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *LAN CABLE ORGANIZER* से संबंधित है, का पंजीकरण, श्रेणी 14-06 में 1.Mlr Institute Of Technology 2. A Vivek Anand 3.Muhammed Anaz Khan के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

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डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि :
Date of Issue : 25/09/2024

उन्नत की ओर

महानियंत्रक पेटेंट, डिजाइन और व्यापार चिह्न
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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :16/10/2024

(21) Application No.202441078423 A
(43) Publication Date : 25/10/2024

(54) Title of the invention : EMERGENCY LANDING GEAR DEPLOYMENT MECHANISM

(51) International classification :B64D25/00, B64C25/30, B64C25/66, B64C25/00, B64C25/10, B64C25/20
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
An aircraft's landing gear system allows it to take off and land safely and comfortably. The impact force that is absorbed by the landing gear, shock absorbers, and actuators during landing causes the entire aircraft to undergo distinct forcing functions due to its horizontal and vertical velocity. In our invention proposed a selection approache for the installation of an electronic actuator in the nose landing gear retraction mechanism of an aircraft weighing 1600 kg gross takeoff weight. The hydraulic oil was represented as a nonlinear damper with an equivalent damping constant, and the air in the oleo-pneumatic shock absorber of the nose landing gear as a nonlinear spring with an equivalent spring constant. A sinusoidal forcing function solution is proposed for the nose landing gear system, which was modeled as a mass-spring-damper system. The nose landing gear was chosen to be retracted and extended using an electrical actuator that could meet all aircraft requirements, including fuselage space, ground clearance, locking loads, power consumption, retraction and extension times, and dynamic response. Based on the measurement of forces applied to the electrical actuator under a single-point load at gross takeoff weight, the electrical actuator was selected. 4 Claims & 1 Figure

No. of Pages : 9 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/10/2024

(21) Application No.202441082642 A
(43) Publication Date : 01/11/2024

(54) Title of the invention : PASSENPRO: PASSENGER PROFESSIONAL ASSISTANCE

(51) International classification	:G06Q0050400000, G06Q0050140000, G06Q0010020000, G16H0040200000, G08B0003100000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
PassenPro: Passenger Professional Assistance is a cutting-edge system aimed at making the boarding process smoother and more enjoyable, especially for minors and senior citizens. By blending advanced hardware and software, PassenPro simplifies boarding and provides help throughout the journey. It uses an LCD, LEDs, a Bluetooth module, and a pushbutton to guide passengers. The LCD shows gate status, while LEDs signal correct or incorrect gate entry and help requests. Barcodes are scanned and matched with flight codes to ensure accuracy. If a passenger enters the wrong gate or needs assistance, the system notifies ground staff promptly. For help, passengers can press a button that triggers visual and auditory alerts for staff attention. This ensures quick support, enhancing the travel experience. The system resets after each use, staying efficient and ready for the next passenger. 3 Claims and 3 Figures

No. of Pages : 11 No. of Claims : 3

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :31/08/2024
(21) Application No.202441065950 A
(43) Publication Date : 13/09/2024

(54) Title of the invention : METAL MATRIX COMPOSITES WITH NANO FILLERS

(51) International classification	:C22C0049060000, B01D0039200000, C22C0001100000, C01B0032182000, F16D0065020000
(86) International Application No Filing Date	:NA :NA
(87) International Publication No	: NA
(61) Patent of Addition to Application Number Filing Date	:NA :NA
(62) Divisional to Application Number Filing Date	:NA :NA

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(57) Abstract :
The aluminum-based Metal matrix composite reinforced with graphene is disclosed in the current invention. This innovation primarily aims to provide methods, frameworks, and processes for producing metal matrix composite structures with enhanced mechanical properties at a lower manufacturing cost in comparison to the current state-of-the-art technology. The objective of the invention is to enhance the mechanical characteristics of the present aluminum MMC by exploring different combinations of graphene. The procedure includes blending Al7075, graphene, and Al203. The components are combined with the following weight percentages: Al7075 at 97%, graphene at 2.5% by weight, and the remainder as Al203. The initial stage entails cleaning the crucible and then heating it to 2000C. Subsequently, introduce Al7075 into the crucible and elevate the temperature to 7200C. The Silicon Carbide and Alumina is incorporated into the heated Al7075 and the temperature is increased upto 7500C. The mixture is stirred well for 10 minutes at 100 rpm until the uniformity is achieved. The liquefied material is poured into the die of the desired shape and allows it to cool. 3 claims & 4 Figures

No. of Pages : 12 No. of Claims : 3

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते

ORIGINAL
क्रम सं/ Serial No. : 181547

पेटेंट कार्यालय, भारत सरकार | The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 425340-001

तारीख / Date : 31/07/2024

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देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *FOLDER HOLDER* से संबंधित है, का पंजीकरण, श्रेणी 19-99 में 1.Mlr Institute Of Technology 2. A Vivek Anand 3.Muhammed Anaz Khan के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

Certified that the design of which a copy is annexed hereto has been registered as of the number and date given above in class 19-99 in respect of the application of such design to *FOLDER HOLDER* in the name of 1.Mlr Institute Of Technology 2. A Vivek Anand 3.Muhammed Anaz Khan.

डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि :
Date of Issue : 27/09/2024

उन्नत की मंडिल

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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/10/2024
(21) Application No.202441082640 A
(43) Publication Date : 01/11/2024

(54) Title of the invention : LANDING SYSTEM FOR UAV USING QUANTUM LOCKING MECHANISM

(51) International classification :B64C0039020000, B64U0070000000, G01S0019150000, B64U0070950000, G08G0005020000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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(57) Abstract :
In recent years, the utilization of Unmanned Aerial Vehicles (UAVs) has expanded exponentially, finding applications across many sectors, including military, agriculture, surveillance, and logistics. As the demand for UAVs continues to rise, there is an ever-increasing need for innovative landing systems that can ensure precise and reliable landings in various environments and under adverse conditions. Traditional landing mechanisms such as GPS-based systems face limitations in terms of accuracy and susceptibility to interference. To address these challenges the integration of emerging technologies like quantum levitation, has opened up new frontiers in the development of advanced UAV landing systems. This invention introduces a ground-breaking concept of UAV Landing System Using Quantum Locking Mechanism. Quantum locking, an intriguing phenomenon rooted in the principles of superconductivity, promises to revolutionize the precision and reliability of UAV landings, this landing system offers the potential to overcome many of the limitations associated with conventional landing methods.The Invention,UAV Landing System Using Quantum Locking Mechanism depicts a significant step towards the development of next-generation UAV technology, with the potential to impact a wide range of industries and applications.

No. of Pages : 11 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION
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(22) Date of filing of Application :29/06/2024
(21) Application No.202441049930 A
(43) Publication Date : 05/07/2024

(54) Title of the invention : METHOD TO IMPROVE THE MECHANICAL PROPERTIES OF COMPOSITE LAMINATES

(51) International classification :C08J0005240000, C08G0059620000, B32B0005260000, E04C0002340000, E04C0005070000
(86) International Application No :NA
Filing Date :NA
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Filing Date :NA
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Filing Date :NA

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(57) Abstract :
The polymer fiber-reinforced composites are extensively researched for their potential in high-performance industries such as aerospace, automotive, and ground transportation. The polymer fiber-reinforced composites offer high strength and inertia. However, their use is hindered by inherent drawbacks, primarily hazardous to environment compared to the natural fibers. Despite these challenges, composites made from glass and specialty synthetic fibers continue to be attractive due to benefits like a high strength-to-weight ratio and excellent resistance to heat and chemicals. To overcome the limitations of polymer fibers, natural fibers are often combined with synthetic fibers. The proposed invention aims to maintain high strength and stiffness in polymer fiber-reinforced composites with improved resistance to moisture absorption and fire hazards. 4 Claims & 4 Figures

No. of Pages : 12 No. of Claims : 4

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सत्यमेव जयते

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डिजाइन के पंजीकरण का प्रमाण पत्र | Certificate of Registration of Design

डिजाइन सं. / Design No. : 425345-001

तारीख / Date : 31/07/2024

पारस्परिकता तारीख / Reciprocity Date* :

देश / Country :

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो *DOMESTIC GAS CYLINDER CARRIER* से संबंधित है, का पंजीकरण, श्रेणी 12-05 में 1.Mlr Institute Of Technology 2. B. Nagaraj Goud 3.K. Sukumar Stalin 4.G. Varun 5.Ch. Nikhil के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

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डिजाइन अधिनियम, 2000 तथा डिजाइन नियम, 2001 के अध्यधीन प्रावधानों के अनुसरण में।

In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि :
Date of Issue : 13/09/2024

उन्नत की ओर

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(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/06/2024
(21) Application No.202441049927 A
(43) Publication Date : 05/07/2024

(54) Title of the invention : METHOD TO IMPROVE THE MECHANICAL PROPERTIES OF NATURAL COMPOSITES

(51) International classification :C08K0007020000, C08L0023120000, C04B0111000000, C08L0023100000, B29C0048000000
(86) International Application No :NA
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(57) Abstract :
Natural composite is a material, formed by combining natural fibers, such as hemp or flax, with a synthetic matrix, often composed of polymers like Epoxy Resin, Polyester Resin, Polyethylene Resin, Polypropylene Resin and Polypropylene Resin. The natural fibers contribute strength and environmental sustainability, while the synthetic matrix enhances durability and structural integrity, resulting a versatile composite material for various applications and unique properties of both components for improved overall performance. These composites are considered as environmentally friendly alternatives to traditional materials due to the renewable nature of hemp and the recyclability of polypropylene. In the proposed invention, mechanical properties of natural composite laminate are improved without affecting its physical and chemical properties. 4 Claims & 3 Figures

No. of Pages : 12 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :29/10/2024
(21) Application No.202441082641 A
(43) Publication Date : 01/11/2024

(54) Title of the invention : WIND POWERED AUTOMATED SOLAR DISTILLED DEHUMIDIFICATION DESALINATION SYSTEM

(51) International classification	:C02F0103080000, C02F0001000000, G01N0033180000, H02S0020300000, H04W0008260000
(86) International Application No Filing Date	:NA :NA
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(57) Abstract :
The energy for the desalination system was drawn from renewable sources with the help from solar panels and wind turbines. The proposed system employs a dehumidifier for better performance and system is incorporated with sensors that measure parameters including water quality, flow rate, and performance data. These parameters provide prospective autonomous real-time control. Our invention is an autonomous and energy-efficient system and has the ability to produce high-quality potable water. The system's modular design and adaptability offer opportunities for customization and scalability to meet diverse water demands. 6 Claims and 2 Figures

No. of Pages : 8 No. of Claims : 6

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :12/07/2024

(21) Application No.202441053234 A
(43) Publication Date : 26/07/2024

(54) Title of the invention : COIR REINFORCED JAGGERY COMPOSITE

(51) International classification :C08J0005040000, A01G0024250000, E02B0003120000, C08K0007020000, C04B0028040000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
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(57) Abstract :
The development of sustainable and eco-friendly materials is imperative in the face of escalating environmental concerns. In our invention the potential of coir fiber reinforcement in jaggery-based composites is explored, aimed at creating biodegradable materials with enhanced mechanical properties. The Coir, a natural fiber extracted from coconut husk, is renowned for its high lignin content and robust mechanical strength, while jaggery, a traditional unrefined sugar, offers a biodegradable and renewable matrix. A series of coir-reinforced jaggery composites were fabricated and their mechanical properties were evaluated. The composites were subjected to a thorough morphological analysis using scanning electron microscopy (SEM) to understand the fiber-matrix interaction. The results indicate a significant improvement in the mechanical properties of the jaggery matrix with the incorporation of coir fibers. The SEM analysis revealed good fiber-matrix adhesion, contributing to the enhanced strength and durability of the composites. The findings of our invention highlight the feasibility of utilizing natural fiber and matrix to develop eco-friendly materials, contributing to the reduction of plastic dependency and environmental pollution. 4 claims & 1 Figure

No. of Pages : 8 No. of Claims : 4

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :21/10/2024
(21) Application No.202441079798 A
(43) Publication Date : 25/10/2024

(54) Title of the invention : MICROPATTERNED SURFACE FOR CONTROLLING CORROSION ON STEEL SURFACE

(51) International classification :G01N0017020000, C09D0005080000, B05D0005080000, G01N0013020000, C09K0003180000
(86) International Application No :NA
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(87) International Publication No : NA
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(57) Abstract :
A novel biomimetic surface was proposed to minimize wetting and eradicate corrosion in SS304 steel. The micropatterns were formed on SS304 steel using chemical etching process. The wetting and corrosion study was conducted using standard sessile drop method and potentiodynamic polarization experiment in saline water (pH = 8& duration = 7 days). The contact angle, contact diameter, corrosion potential and corrosion current density were used to quantify the effect of wetting and corrosion in micropatterned surface. The wetting and corrosion parameters were compared with different geometrical dimensions of micropatterns. The choosing proper geometrical dimension for micropatterns plays a vital role in wetting and corrosion. SEM image was taken before and after corrosion to visualize the variation in surface asperities due to corrosion. The micropatterns decrease the interface between solid and liquid medium, isolates the substrate from the corrosive medium. The micropatterned surface shows less wetting and better corrosion resistance property when compare to flat surface. 4 Claims & 1 Figure

No. of Pages : 8 No. of Claims : 4