Gacem M, Ould-El-Hadj-Khelil A, Boudjemaa B and Wink J (2020), ***"Antimicrobial and Antioxidant Effects of a Forest Actinobacterium V002 as New Producer of Spectinabilin, Undecylprodigiosin and Metacycloprodigiosin"*****, Current Microbiology. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The aim of the study is the research and identification of a Streptomyces strain as a new producer of spectinabilin, undecylprodigiosin and metacycloprodigiosin. Among 54 actinomycete isolates isolated from El-Ogbane forest soils in Algeria, only one isolate, designated V002, was selected for its ability to produce prodigiosins. The selected strain was analysed for its ability to produce three different secondary metabolites as well as their biological activities. V002 belongs to the Streptomyces genus and has significant antimicrobial and antioxidant activities. The taxonomic position of V002 by 16S rRNA sequence analysis showed a similarity of 99.93% with Streptomyces lasiicapitis DSM 103124T and 98.96% with Streptomyces spectabilis DSM 40512T. Fractionation of crude secondary metabolites produced by the strain using HPLC–MS revealed the presence of spectinabilin, undecylprodigiosin and metacycloprodigiosin, which demonstrated significant activity. Strain V002 is considered a new producer of spectinabilin, undecylprodigiosin and metacycloprodigiosin with significant antimicrobial and antioxidant activity. © 2020, Springer Science+Business Media, LLC, part of Springer Nature.

Ghenabzia A, Kazar O, Merizig A, Sayah Z and Zoubeidi M (2020), ***"Drilling Stuck Pipe Prediction in Algerian Oil Fields: Time Series Forecasting Approach"*****, Advances in Intelligent Systems and Computing. Vol. 1104 AISC, pp. 262-275. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The Companies specialized in oil drilling field make to reduce the cost of digging and optimize the operation time. The Drill string stuck (stuck pipe) is the biggest frequent problem during drilling operation which imposes rises to the drilling cost of services. The main goal of the drillers is the minimization of the Drilling Time and Reduce the Drilling Cost with avoiding the Drilling Problems (e.g. Stuck pipe). They are trying to use new methods based on artificial intelligence to solve these problems. Generally, the stuck pipe is discovered too late after the accident. The aim of this study is trying to predict this problem before happening which is possible to provide the best solution to limit the consequences and avoid the danger and its financial loss. To solve this problem, it is more convenient to propose a new architecture based on time series forecasting for analyzing the huge Algerian oils fields drilling datasets and implement it in the Hadoop Ecosystem. © Springer Nature Switzerland AG 2020.

Ghezal A (2020), ***"On the study of variational inequality of generalized Marguerre–von Kármán's type via Leray–Schauder degree"*****, Topological Methods in Nonlinear Analysis. Vol. 55(1), pp. 369-383. Juliusz Schauder Center for Nonlinear Analysis.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The objective of this work is to study the existence theory for a class of variational inequalities of generalized Marguerre–von Kármán's type, which model unilateral problem for the buckling of generalized Marguerre–von Kármán shallow shells. More specifically, we reduce this problem to a variational inequality with cubic operator. Then, we prove the existence of solutions to this problem by using the Leray–Schauder degree. © 2020 Juliusz Schauder Centre for Nonlinear Studies Nicolaus Copernicus University in Toruń.

Goudjil M, Zighmi S, Hamada D, Mahcene Z, Bencheikh S and Ladjel S (2020), ***"Biological activities of essential oils extracted from Thymus capitatus (Lamiaceae)"***, **South African Journal of Botany. Vol. 128, pp. 274-282. Elsevier B.V..**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The present study aims to investigating, the chemical composition of the essential oil extracted from Thymus capitatus harvested in west, Algeria. It seeks the other objective to the determination of antioxidant, antibacterial and antifungal activities of oil in order to find new metabolite products, which are characterized by a biological activity. The investigations and research was carried out on the essential oil (EO) extracted from the dried leaves of Thymus Capitatus Lamiaceae that was harvested in the region of Tiart (West of Algeria). GC–MS analysis of EO is identified 22 components while thymol, carvacrol and γ-terpinene are the major components. The antioxidant activity of EO was evaluated by three methods: the DPPH test (2,2-diphenyl-1-1-picrirylhydrazil), the FRAP (Ferric reducing antioxidant power) and TAC (Total Antioxidant Capacity) test and compared with ascorbic acid, BHA (Butylated hydroxy anisole) and commercial thymol as standards. The results indicated that Thymus Capitatus oil showed higher antioxidant power in comparison with the standards with values of (0.61, 2.13 and 0.78) μg/mL for the DPPH, FRAP and TAC tests respectively. Also, the antibacterial activity of the oil was tested using the agar disc diffusion method, by determining the inhibition zone and the minimum inhibitory concentration (MIC). In this case, the results have shown a potential of the antibacterial activity than commercial antibiotics (Chloramphenicol, Cefoxitin, Gentamycin) against the tested strains, with MIC values of (29.44, 14.72, 14.72 and 7.36 μg/mL) for Staphylococcus aureus, S. typhi, E. coli and Streptococcus pneumoniae strains respectively. Furthermore, the antifungal study on the fungi of Cladosporium herbarum, Alternaria infectoria, Aspergillus Ochraceus, Trichophyton Sp reported significant results. The effectiveness of the oil showed that the essential oil has a fungicidal effect against the strains Cladosporium herbarum, Alternaria infectoria and a fungistatic effect against strains Aspergillus ochraceus and Trichophyton rubrum. The research outcomes clearly demonstrate that the essential oils of thymus capitatus can present an interesting alternative naturel which can be useful for food preservation and pharmaceutical treatment. © 2019 SAAB

Gougui A, Djafour A, Danoune M and Khelfaoui N (2020), ***"Field experience study and evaluation for hydrogen production through a photovoltaic system in Ouargla region, Algeria"***, **International Journal of Hydrogen Energy. Vol. 45(4), pp. 2593-2606. Elsevier Ltd.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: An experimental study on small-scale for solar hydrogen production system via a Proton Exchange Membrane electrolysis under a desert climatic condition in Ouargla region (South-East of Algeria) has been carried out, the target of this study has been first to evaluate hydrogen production by water analysis and to store the solar energy which has had the form of a hydride-metal hydrogen, after that, to investigate the performance of sophisticated commercial electrolyser (HG-60)powered by photovoltaic panels via the Power Management Unit (PMU) as a power conditioner, this paper has also a mathematical models based on real-time experiments were used to simulate both the photovoltaic system and PEM electrolyser work, along with attempting to direct linking strategy with the same experimental components of photovoltaic panels and commercial electrolyser, it was found through this study, the addition of the number of commercial electrolyser with the bank of four HG-60 stacks in series. More effective considering the improving voltage matching, with power transfer efficiency reach to 99%, also another factor is the photovoltaic panels slope on panel output power and hydrogen productivity are theoretically examined, where the proper selection of optimal tilt angle has an importance for collecting the maximum hydrogen amount, eventually, over the experiment span, the real-amount of hydrogen vented over experiment course is around 92.54l. © 2019 Hydrogen Energy Publications LLC

Guechi E-K and Benabdesselam S (2020), *"Removal of cadmium and copper from aqueous media by biosorption on cattail (Typha angustifolia) leaves: Kinetic and isotherm studies"*, Desalination and Water Treatment. Vol. 173, pp. 367-382. Desalination Publications.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The aim of the present study is the characterization and evaluation of heavy metals, cadmium and copper, removal ability of cattail (Typha angustifolia) leaves (CL) as a novel biosorbent from aqueous media under various operating conditions in a batch process. The CL were characterized by X-ray diffraction, scanning electron microscope, Fourier transform infrared spectrometer, isoelectric potential (pHzpc) and Boehm titration method. Batch experiments were performed to examine the effect of operating parameters such as temperature (25°C–55°C), initial solution pH (3–6), ionic strength (0–5 g/250 mL), stirring speed (0–600 rpm), biosorbent dose (0.3–1.5), biosorbent particle size (0.18–1.5 mm), contact time (0–70 min) and initial concentration (25– 300 mg/L) of metal ions on the removal of cadmium and copper. It was found that the equilibrium time at initial concentrations from 25 to 300 mg/L, was from 10 to 30 min and from 5 to 25 min, respectively, for copper and cadmium. This shows a good kinetic property of Typha angustifolia. The kinetics data of biosorption for both metal ions were studied by applying Lagergren pseudo-first-order, Blanchard pseudo-second-order, Elovich, Natarajan–Khalaf and intraparticle diffusion models. The obtained results indicate that the biosorption system of both metals on CL obeyed pseudo-second-order kinetics model ($r \geq 0.996$) and the diffusion mechanism reveals that intraparticle diffusion ($r \geq 0.990$) is not the only rate limiting step. Additionally, the biosorption isotherm data were analyzed by four isotherm models Langmuir, Freundlich, Harkins–Jura and Flory-Huggins models. Equilibrium data can be well described by the Langmuir model for both metal ions, showing maximum monolayer biosorption capacity (q_m) of 97.80 and 113.46 mg/g at 25°C for copper and cadmium, respectively. Furthermore, thermodynamic parameters such as ΔG°, ΔS° and ΔH° were calculated, and the results suggest that the biosorption is spontaneous, a physical process for both metals. Complete regeneration of the CL was obtained even after three cycles. These results reveal that the CL (Typha angustifolia) are suitable biosorbent materials for the removal of heavy metals from aqueous media. © 2020 Desalination Publications.

Guenane H, Mechraoui O, Bakchiche B, Djedid M, Gherib A and Benalia M (2020), *"Antibacterial, antioxidant activities and mineral content from the algerian medicinal plants"*, Scientific Study and Research: Chemistry and Chemical Engineering, Biotechnology, Food Industry. Vol. 21(2), pp. 175-194. ALMA MATER Publishing House â€ " "VASILE ALECSANDRI" UNIVERSITY OF BACAU.
[Abstract] [BibTeX] [URL]

Abstract: The present study evaluated the antioxidant and antibacterial activities of six aromatic plants, indigenous to the flora of the Algerian. The plants studied were Thymus vulgaris, Artemisia absinthium, scorzonena undulata, Malva Parviflora, Marrubium vulgare and Cotula cinerea. Extracts of these plants were analyzed for their total phenol compounds and antioxidant activity. The antimicrobial screening of the extracts was evaluated by agar disc diffusion method, the liquid broth microdilution was used to determine the minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC). Essential oil of A. absinthium possesses highest antioxidant activity among all extracts tested and phenolic extract of T. Vulgaris highest of DPPH radical. Among the plants screened, essential oil of A. absinthium and T. Vulgaris phenolic extract showed the best antibacterial activity. The mineral contents were determined by an atomic absorption spectrophotometer. Ca, K, Na, Mg, Fe and Cu were found to be the most abundant elements among the plants studied.

HABCHI A, KALLOUM S and BRADAI L (2020), ***"Follow the degradation of organic matter during composting of date palm (phoenix dactylifera L) waste by physicochemical properties, UV-visible and FT-IR analysis"*****, International Journal of Environmental Analytical Chemistry. Taylor and Francis Ltd..**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Palm tree waste is considered among the most widespread organic waste in nature and the least exploited in our days. In the Arabic region and the North of Africa, the date palm tree cultivation represents the lion's share compared to the other trees. But the wastes will stay always represent a risk on the environment due to their limits uses. The composting process is considered the most effective technique to exploiting these wastes and to eliminate environmental pollution. In this work, we prepared four mixtures from date palm waste (DPW) named C1, C2, C3, and C4. The composting process was evaluated through the physicochemical properties like; temperature, pH, electronic conductivity (EC), total organic carbon (TOC), total Kjeldahl nitrogen (TKN), C/N ratio, humic substance, UV spectroscopy and FTIR spectroscopy. The obtained results showed that the temperature increased up to 40.3°C, 40.8°C, 42.5°C, and 45.7°C, then decreased to 22.7°C, 22.7°C, 21.5°C and 21.2°C at the end of process for C1, C2, C3, and C4, respectively. The final organic compost had a natural soil odour and brown in colour. The C/N ratio of final compost recorded as 20.6, 16.0, 14.9, and 13.8 for C1, C2, C3, and C4, respectively. The loss in organic carbon reached 8.9% (C1), 10.3% (C2), 10.4% (C3) and 10.5% (C4). These results were confirmed by UV-visible and FTIR spectra analysis which showed different absorption bands from one mixture to another, as well as variable absorption ratios at the same compost level.

Hadef H, Negrou B, Ayuso T, Djebabra M and Ramadan M (2020), ***"Preliminary hazard identification for risk assessment on a complex system for hydrogen production"*****, International Journal of Hydrogen Energy. Vol. 45(20), pp. 11855-11865. Elsevier Ltd.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Renewable power generation facilities are constantly expanding due to the expected depletion of fossil fuels and the increasingly demanding policy of pollution control. Having said that, hydrogen is one of the promising energy sources. That said, hydrogen chain safety is an unescapable parameter that should continuously coexist with the development of hydrogen domain. In this context, this article presents a contribution to the risk analysis and evaluation of a complex hydrogen production system 'EGA-9000' at CIEMAT (Centre for Research on Energy, Environment and Technology - Madrid, Spain). The methodology followed in this study revolves around the risk analysis process through a FAST (Functional Analysis System Technique) functional analysis method and a HAZOP (HAZard and Operability) dysfunctional analysis method. The evaluation of the thirty-three scenarios identified by the risk analysis shows that the studied system is insecure. Indeed, five scenarios at an unacceptable level of risk. And it is noted that the risk of fire and explosion is the major risk for all scenarios studied. To this end, safety measures (recommendation) have been proposed based on the weaknesses detected by the risk analysis carried out. © 2019 Hydrogen Energy Publications LLC

Hadjadj A, Benhaoua B, Atia A, Khechekhouche A, Lebbihiat N and Rouag A (2020), ***"Air velocity effect on the performance of geothermal helicoidally water-air heat exchanger under El Oued climate, Algeria"*****, Thermal Science and Engineering Progress. Vol. 20 Elsevier Ltd.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This paper investigates experimentally the effect of air velocity on the performance of a water–air helical heat exchanger (HWAHE) in the region of El-Oued, located in the southeast of Algeria. The HWAHE made of PVC piping with 30 m of length and 0.06 m of diameter was immersed into the bottom of a water well at 5 m depth. In addition, a theoretical model was developed to determine the evolution of the air temperature inside the HWAHE as function of the main operating parameters. Results showed that the maximum heat exchange reached nearly 418 W at 10 m/s of air velocity while the maximum of temperature gap between the inlet and the outlet air was 14.1 °C. The HWAHE efficiency decreased with the increase of the air velocity. The efficiency of heat exchanger was obtained to be 82%, 81% and 80% for the average velocity value of 10, 15 and 20 m/s, respectively. According to the obtained results, the HWAHE presented in this paper may be used for cooling and heating of buildings or greenhouses in the southeastern Algeria. © 2020

Hammouche H, Lemkeddem M, Guerbati K and Ezzinbi K (2020), ***"Existence results for some impulsive partial functional fractional differential equations"*****, Asian-European Journal of Mathematics. Vol. 13(4) World Scientific Publishing Co. Pte Ltd.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In this paper, we study the existence of mild solutions of impulsive evolution fractional functional differential equation of order $0 < \alpha < 1$ involving a Lipschitz condition on term Ik. We shall rely on a fixed point theorem for the sum of completely continuous and contraction operators due to Burton and Kirk. © 2020 World Scientific Publishing Company.

Hamza A and Ramdani M (2020), ***"Non-PDC Interval Type-2 Fuzzy Model Predictive Microclimate Control of a Greenhouse"*****, Journal of Control, Automation and Electrical Systems. Vol. 31(1), pp. 62-72. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Greenhouse climate control is known as a challenging task since it is characterized by the strong interaction among the involved variables, the time-varying uncertainties, and the external disturbances that severely affect its internal environment. In this paper, a discrete-time fuzzy model predictive control approach of a greenhouse is investigated. An interval type-2 (IT2) Takagi–Sugeno fuzzy model is employed to represent the nonlinear dynamics of the plant subject to parameter uncertainties, which are effectively captured by interval membership functions. To design the fuzzy model predictive controller, an optimization problem which minimizes a quadratic cost function respecting the input and state constraints is formulated and solved at each sampling instant in the prediction time horizon. By introducing a non-parallel distributed compensation (non-PDC) design concept and based on the non-

quadratic Lyapunov function, less conservative conditions are developed in terms of linear matrix inequality to guarantee the stability analysis. Simulation results illustrate the effectiveness of the proposed control approach in leading to promote a comfortable greenhouse microclimate for the growth of the crops. © 2019, Brazilian Society for Automatics--SBA.

Hebbal B, Marif Y, Belhadj M, Chiba Y and Zerrouki M (2020), *"Thermal Comfort in Southern Algeria: Some Useful Investigation and Case Study"*, Lecture Notes in Networks and Systems. Vol. 102, pp. 275-283. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This paper aims to discussing some studies that have proposed in order to create an acceptable thermal comfort and improve people's quality of life in Algerian Saharan contemporary buildings. On the other hand and in climate conditions of Ouargla town situated in northern east of Algerian Sahara, the impact of insulation in the cooling load of one room with air condition of 26 °C was studied. The investigation finds that the energy demand for summer cooling was lower in the case of insulated exterior walls; the peak cooling load was in the region of 1.2 kW. © 2020, Springer Nature Switzerland AG.

Hefaidh H and Mébarek D (2020), *"Using Fuzzy-Improved Principal Component Analysis (PCA-IF) for Ranking of Major Accident Scenarios"*, Arabian Journal for Science and Engineering. Vol. 45(3), pp. 2235-2245. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The industrial risk mapping is a topical problem in the field of risk management that attracts many researchers to develop risk matrices to ensure consultation between their actors. In this context, this paper aims to propose the principal component analysis (PCA) method as support for this consultation. Indeed, the use of PCA method is justified by its robustness for aggregate initial data associated with industrial risks as principal factors and ranking of this risk in terms of their criticalities in risk matrices. However, the aggregation of initial data on industrial risks by the main factors, in some cases, leads to inaccuracies which make it difficult to classify certain risks. This paper proposes two variants of PCA method to solve this inaccuracy and succeeds in classifying risks according to their respective criticalities, namely PCA-Improved (PCA-I) and PCA-I-Fuzzy (PCA-IF). The results come from the PCA application and its proposed variants (PCA-I and PCA-IF) on an example of accident scenarios ranking. We have established a scientific basis for the capitalization of mapping tool for consultation and decision support to industrial risk managers. © 2019, King Fahd University of Petroleum & Minerals.

Hefaidh H and Mébarek D (2020), *"A conceptual framework for risk matrix capitalization"*, International Journal of Systems Assurance Engineering and Management. Vol. 11(3), pp. 755-764. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Research on risk matrices show that there is considerable diversity in the practice of designing risk matrices. This has led to serious problems of standardization and communication. Indeed, these problems affect at the same time on the development of matrices and in their exploitation in term of risk assessment. To solve these problems, this paper proposes an experience feedback method that aims to capitalize the feedback invariants resulting from the analysis of existing risk matrices. This capitalization allows developing a theoretical framework of the robust risk matrices design. The application of the proposed method for examples of matrices confirms the interest of articulating these risk matrices designs through an argument based on experience feedback. In this sense, the merit of the proposed experience feedback method is that it promotes the sharing of knowledge between the actors involved in a risk assessment. © 2020, The Society for Reliability Engineering, Quality and Operations Management (SREQOM), India and The Division of Operation and Maintenance, Lulea University of Technology, Sweden.

Idder-Ighili H, Agustian A, Idder M, Guillaumin J, Wipf D and Botton B (2020), *"Production of β-glucosidases by European Armillaria species"*, Forest Pathology. Blackwell Publishing Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Production of β-glucosidase was investigated in nine isolates of Armillaria representing four species found in Europe: Armillaria mellea and Armillaria ostoyae, considered to be pathogenic and moderately pathogenic, respectively, and Armillaria. gallica and Armillaria cepistipes, both considered to be non-pathogenic. β-glucosidase was predominantly produced in the rhizomorphs, while the vegetative mycelium produced only a low amount of enzyme. Pachlewski's medium containing ammonium tartrate, glucose, maltose and thiamine was very efficient in promoting differentiation and growth of rhizomorphs. In A. ostoyae and A. cepistipes, a large proportion of β-glucosidase production was endocellular, but the rhizomorphs of all species excreted significant amounts of the enzyme in the culture medium once they had grown. The pathogenic species A. ostoyae and A. mellea excreted significantly more β-glucosidase than the non-pathogenic species, indicating that this enzyme might play a key role in pathogenicity. Native intracellular β-glucosidases were visualized as three bands at 470, 164 and 82 kDa on polyacrylamide gradient gels. The native excreted enzymes exhibited two, three or four bands depending on the isolates, with molecular weights ranging from 170 to 400 kDa. © 2020 Blackwell Verlag GmbH

Issasfa B, Benmansour T, Valle V and Bouakba M (2020), *"Experimental study of mechanical behaviour of renewable fibre reinforced composite materials type (Cynara cardunculus L/polyester)"*, Revue des Composites et des Materiaux Avances. Vol. 30(1), pp. 1-8. International Information and Engineering Technology Association.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This study is particularly focused on renewable materials of bio-composites. Our work draws on the extraction method and the mechanical characterisation of natural fibres of artichokes (Cyanara cardunculus L) which are produced naturally and in abundance in the northern regions of Algeria particularly so in the north-east. It also draws on the manufacturing of composite with bio-reinforcement models consisting of long fibres of laminated materials of the Cyanara cardunculus L type compiled with unsaturated polyester resin. Standardised sample test-pieces are then drawn from these models so as to carry out tensile and shear tests to evaluate their mechanical behaviour. Additionally, the diversity in characteristics necessitates the use of statistical approaches in order to estimate the proper Weibull parameters of natural fibres, based on a Weibull distribution. © 2020 Lavoisier. All rights reserved.

Kadri F and Hamida M (2020), *"Neural direct torque control for induction motor under voltage source inverter open switch fault"*, Recent Advances in Electrical and Electronic Engineering. Vol. 13(4), pp.

571-579. Bentham Science Publishers.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Background: The study of induction motor behavior during abnormal conditions due to the presence of faults and the possibility to diagnose these abnormal conditions has been a chal-lenging topic for many electrical machine researchers. Objective: Direct Torque Control (DTC) is applied to the control of an induction motor in healthy and an open circuit fault in the PWM three phase voltage fed inverter. Neural DTC is developed and used to improve the dynamic behavior of the drive system under faulty switch occurrence. Methods: The validity of the proposed control scheme is tested under normal conditions and switching fail in the Voltage Source Inverter (VSI) caused by an open circuit. Through a simulation testing of an induction motor drive system at different speed references, a comparison between basic DTC and Neural DTC is performed. Results: Simulated results on 1.5-kW induction motor drive show the performance of the proposed control in normal and faulty cases. The stator current, flux, torque, and speed at different references are determined and compared in the above techniques using MATLAB-SIMULINK. Conclusion: A Neural Network (NN) DTC control system under an open switch fault is proposed without the need for classical switching table. The use of hybrid intelligent techniques aims to improve the DTC performances in case of multiple faults occurrence. © 2020 Bentham Science Publishers.

Kahla S, Bechouat M, Amieur T, Sedraoui M, Babes B and Hamouda N (2020), ***"Maximum power extraction framework using robust fractional-order feedback linearization control and GM-CPSO for PMSG-based WECS"*****, Wind Engineering. SAGE Publications Inc..**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The most important issue in the use of wind energy conversion systems is to ensure maximum power extraction in terms of efficiency. Therefore, maximum power point tracking algorithms are as important as the maximum power point tracking controller. In this study, maximum power extraction frameworks operating the state-of-the-art optimization methods are presented for permanent magnet synchronous generator–based wind energy conversion system. These frameworks consist of a Gauss map–based chaotic particle swarm optimization and a hybrid maximum power point tracking approach that combines feedback linearization technique with fractional-order calculus. The feedback linearization control strategy can fully decouple and linearize the original state variables of the nonlinear system and thus provide an optimal controller crossing wide-range operating conditions. The objective is to maintain the tip speed ratio at its optimal value, which implies the use of a rotational speed loop. The method is based on the feedback linearization technique and the fractional control theory. Gauss map–based chaotic particle swarm optimization, which is a remarkable and recent optimization technique, is utilized to achieve optimum coefficients to efficiently ensure the maximum power point tracking operation in here. A simulation study is carried out on a 3-kW wind energy conversion system to show the effectiveness of the proposed control scheme. © The Author(s) 2020.

Kahlessenane F, Khaldi A, Kafi R and Euschi S (2020), ***"A DWT based watermarking approach for medical image protection"*****, Journal of Ambient Intelligence and Humanized Computing. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In order to contribute to the security of medical image, we present in this paper a blind and

robust watermarking technique that allows the integration of the electronic patient's record into a computerized tomography scan. In this approach, a discrete wavelet transform is applied to the image before the integration process, then, a topological reorganization of the coefficients of the LL sub-bands is done by the ZigZag scanning method. The obtained coefficients are then combined to integrate the watermark bits. A hash of the electronic patient record being integrated in the image, the integrity of the watermark can easily be verified. After the evaluation of our approach in terms of invisibility and robustness, the experimental results obtained show that our approach offers excellent imperceptibility (with a PSNR above 70 dB) and very good robustness against several geometric and destructive attacks. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Karar A, Henni A, Namoune F and Rosei F (2020), *"Inhibition of nucleation and crystal growth of calcium carbonate in hard waters using Paronychia arabica in an arid desert region"*, Water and Environment Journal. Blackwell Publishing Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The formation of CaCO3 of groundwater has important implications in the industry. Many conventional scale inhibitors are considered environmentally unfriendly. In this study, we investigate the effect of aqueous extract of Paronychia arabica (PA) as new green antiscalant agents on the precipitation of CaCO3 in an arid desert region. The antiscaling properties of these extracts towards CaCO3 formation were tested using chronoamperometry (CA), electrochemical impedance spectroscopy (EIS) and Fast Controlled Precipitation methods. Electrochemical and chemical analysis of Mkhadma groundwater shows a high calcium concentration and the deposit is a pure calcite. The nucleation and formation time were identified. At 32°C, a complete scaling inhibition was obtained using a concentration of 150 mg/L of green extract. The scale inhibitor effect was analysed by an optical microscopic examination. © 2020 CIWEM

Kebaili M, Menaa L, Kebaili N, Tabti S, Bedda R and Kabdi F (2020), *"Development of dune sand by the inclusion of geotextile layers"*, International Journal of Geotechnical Engineering. Vol. 14(5), pp. 490-496. Taylor and Francis Ltd..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The present study proposes the use of dune sand, reinforced with geotextile, as roadway layer. The investigation aims to evaluate the convenience of the reinforced sand, with a view to face of the scarcity of used materials, and also for socio-economic development in northern-Africa Sahara regions. The analytical approach is totally experimental and is based on the California Bearing Ratio (CBR) test procedure. The obtained results are interpreted with referring to bearing of a foundation soil. These indicate that inclusion of single geotextile liner increases the sand CBR value by 73%. The inclusion of two geotextile layers increases this ratio more than 6 times. This makes the sand to pass from a low bearing material to a good supporting novel composite product. The study highlights the advantage of implementing geotextile sheets comparing to geocell reinforcement, as well as the manifest of slab-effect by the confined sandy layer. Furthermore, the soil layer depth beyond which the geotextile contribution becomes insignificant is pointed-out, as well as the sandy layer supporting the applied load. © 2019, © 2019 Informa UK Limited, trading as Taylor & Francis Group.

Kechiched R, Nezli I, Foufou A, Belksier M, Benhamida S, Djeghoubbi R, Slamene N and Ameur-

zaimeche O (2020), *"Fluoride-bearing groundwater in the complex terminal aquifer (a case study in Hassi Messaoud area, southern Algeria): hydrochemical characterization and spatial distribution assessed by indicator kriging"*, Sustainable Water Resources Management. Vol. 6(4) Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: According to the World Health Organisation (WHO), the human consumption of water containing a high concentration of fluoride (> 1.5 mg/l) can increase significantly many health problems such as dental and skeletal fluorosis. This study investigates fluoride abundance, origin, and its spatial distribution in groundwater from Complex Terminal (CT) aquifer in Hassi Messaoud area (Southern Algeria) where the CT water constitutes the main source of drinking water with a high daily intake. Available water wells were sampled and analysed on their major physico-chemical parameters including fluoride content. Hydrochemical characterization was constrained using the Durov diagram together with a PCA statistical treatment. The saturation indices were computed and used to track fluoride origin. The spatial distribution of fluoride in the studied aquifer was mapped by indicator kriging (IK). The results show that fluoride content ranges from 1.6 to 2.9 mg/l (average = 2.1 ± 0.4 mg/l) exceeding WHO drinking water standards. The Durov diagram, PCA and SI indicate that water acquires mineralization principally by leaching of evaporite minerals. Furthermore, SI evidences that fluoride concentration in water increases with CaCO3 precipitation leading to CaF2 dissolution. IK spatial distribution allows estimating the probability of not exceeding (2.1 mg/l) critical threshold. The cross-validation displays good performance of IK estimation (mean error = 0.05; mean standard error = 0.09). The obtained map shows a low to moderate probability of not exceeding the selected threshold in the whole aquifer. Therefore, the use of CT water for human consumption poses a risk to public health. These results can be used in water management framework and for selecting an ideal position to drill new boreholes for drinking water. © 2020, Springer Nature Switzerland AG.

Kechiched R, Laouar R, Bruguier O, Kocsis L, Salmi-Laouar S, Bosch D, Ameur-Zaimeche O, Foufou A and Larit H (2020), *"Comprehensive REE + Y and sensitive redox trace elements of Algerian phosphorites (Tébessa, eastern Algeria): A geochemical study and depositional environments tracking"*, Journal of Geochemical Exploration. Vol. 208 Elsevier B.V..
[Abstract] [BibTeX] [DOI] [URL]

Keddar M, Ballesteros-Gómez A, Amiali M, Siles J, Zerrouki D, Martín M and Rubio S (2020), *"Efficient extraction of hydrophilic and lipophilic antioxidants from microalgae with supramolecular solvents"*, Separation and Purification Technology. Vol. 251 Elsevier B.V..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: There is strong evidence that lipophilic and hydrophilic antioxidants interact in vivo through different mechanisms and that it is their mixed effects what leads to health benefits. Simultaneous extraction of both types of antioxidants from biomass using organic solvents is inefficient because extraction yields for these phytochemicals are highly dependent on the polarity of the solvent. In this work, we firstly propose the use of supramolecular solvents (SUPRAS) as an innovative approach for the simultaneous extraction of a wide polarity range of antioxidants. Different SUPRAS compositions were investigated for extraction of the total content of carotenoids and polyphenols, as representatives of lipophilic and hydrophilic antioxidants, respectively. Under optimal conditions, antioxidants were extracted from freeze-dried biomass of Scenedesmus sp. in an excellent rate related to their total content (up to 1 mg carotenoids/g dw and 10 mg of gallic acid equivalents, GAE/g dw). Screening based on liquid chromatography coupled to tandem mass spectrometry (LC-MS/MS) revealed that lutein was the major carotenoid and caffeic acid the main phenolic compound. The SUPRAS extracts showed high antioxidant activity (25.04 ± 0.73 µM ascorbic acid equivalents antioxidant capacity, AAAC/g dw and 17.02 ± 0.45 µM AAAE/g dw for ABTS and DPPH assays, respectively). SUPRAS offered advantages in terms of non-toxicity, rapidity (5 min extraction) and cost-effectiveness (room temperature, atmospheric pressure) for the recovery of antioxidant compounds from algal biomass and constitute a good alternative to the use of conventional solvents. © 2020 Elsevier B.V.

Kerboua K (2020), *"The perplexing question of trained immunity versus adaptive memory in COVID-19"*, Journal of Medical Virology. John Wiley and Sons Inc..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The wide spectrum of symptoms observed in COVID-19 appears to defy explanation. Apart from geographic limitation to people with prior exposure to other coronaviruses and air pollutants, inflammatory comordidities and older ages are also among the main factors of susceptibility to severe illness. The unusual epidemiological data pointed out in children and African territories have revealed new insights in host-pathogen interplay with more focus on epigenetic regulation of cognitive compartments belonging to innate immunity. Should trained immunity be proven to be involved in timely immune responsiveness against SARS-CoV-2 and that adaptive memory could be detrimental, both treatment regimens and vaccine design will tremendously change accordingly with more focus on upper respiratory tissue innate immunity to subdue this threat underway. This article is protected by copyright. All rights reserved. This article is protected by copyright. All rights reserved.

Kerboua K (2020), *"NLR: A Cost-effective Nomogram to Guide Therapeutic Interventions in COVID-19"*, Immunological Investigations. Taylor and Francis Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Kerboua K and Djenouhat K (2020), *"Complementology's foundation: The 100-year anniversary of the Nobel Prize to Jules Bordet"*, Journal of Immunoassay and Immunochemistry. Vol. 41(1), pp. 106-116. Taylor and Francis Inc..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The discovery of the complement system was associated with the creation of medical serodiagnosis in the early 20th century. Its biotechnological applications, usable even a century after its development by Jules Bordet, preceded for decades the proof of its biochemical rather than biophysical nature. Complement science has begun to emerge, thanks to the labs of Michael Heidelberger and his student Manfred Martin Mayer. Complementology had known difficult moments like the suicide of Louis Pillemer by swallowing the reagents of his laboratory following the criticisms of his discovery by Robert A. Nelson, Jr., in March 1957, at the Walter Reed Army Institute. This alternative complement pathway continues to revolutionize medicine by its implications as the principal component of immunosurveillance and as an amplification loop for plasma proteolytic cascades. Moreover, the drug designed in pathologies related to this pathway, eculizumab, was the most expensive drug in the world at the beginning of its marketing. Complementology promises great hopes in inflammatory and degenerative diseases, regenerative medicine, transplantation, and vector nanotechnology and as a diagnostic tool primarily in transplantation and inflammatory imaging. The moral and historical responsibility requires to make known this legacy to the new generation of doctors and scientists and also the technicians of the clinical laboratory of complementology throughout the world. © 2019, © 2019 Taylor & Francis.

Kerboua K and Djenouhat K (2020), *"Semi-solid phase assay for the alternative complement pathway activity assessment (AP100)"*, Journal of Immunoassay and Immunochemistry. Vol. 41(2), pp. 144-151. Taylor and Francis Inc..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Since the introduction of the most expensive drug in the world (Eculizumab) in the therapeutic arsenal of many diseases involving the alternative complement pathway (ACP) in their pathophysiology, the unmet need to perform simple ACP assays affordable for all countries has become one of the major challenges of the contemporary medicine. The assay currently used is AH50, despite it still challenging for several laboratories. This educational chapter consists of a detail protocol of standardized hemolytic assay AP100 and aims to help clinical laboratories over the world and especially those of the developing and low income countries to perform it. The procedure is essentially the same as for the timed lysis assay and dilution methods (AP50) except the concentration of ACP buffer and the chicken erythrocyte density used to make the gels. In clinical field, AP100 has at least nine applications in disease diagnosis and follow-up. AP100 has many advantages over the AH50 as it is more reliable for the Eculizumab monitoring and more practical with a purpose to be stored and transported for several weeks. AP100 is a portable and easy to use device both at the bedside and in the companion medical care. © 2019, © 2019 Taylor & Francis.

Kheireddine M-A, Rouag A, Benchabane A, Boutif N and Labed A (2020), *"Hybrid cooling tower for a solar adsorption cooling system: Comparative study between dry and wet modes in hot working conditions"*, Green Energy and Technology. , pp. 293-308. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This study investigates the applicability of a hybrid cooling tower (HCT) of solar adsorption air-conditioning system in the hot working conditions of the region of Biskra, Algeria. A calculation method is presented to size the cooling tower and to define the main characteristics of the sprayed water. In addition, the effect of the ambient and humid temperatures on the heat transfer coefficients and the total heat transfer area were determined for both dry and wet modes. Results were compared with experimental measurement obtained from the literature, and good agreement was found. It has been concluded that the wet mode presents an effective solution for the region of Biskra. The ambient operating temperature limits of the cooling tower can be increased from 33 to 51 °C, respectively, for the dry and wet modes. Besides, it was found that the maximum mass flow rate of sprayed water is about 0.036 kg s^{-1} which is sufficient to operate the cooling tower and consequently the solar adsorption system. © Springer Nature Switzerland AG 2020.

Khenfer N, Dokkar B and Messaoudi M (2020), *"Overall efficiency improvement of photovoltaic-thermal air collector: numerical and experimental investigation in the desert climate of Ouargla region"*, International Journal of Energy and Environmental Engineering. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In the Ouargla region, the desert area of Algeria, photovoltaic fields (PV) suffer from hard climate conditions with high-temperature levels. This temperature level causes a significant fall of PV cells efficiency which requires an integrated cooling system. For achieving this purpose, a thermal part based on airflow provided along a straight channel under the PV module (150 W) is added. It extracts the accumulated heat by air natural convection, then, the airflow passes through an upper glass extension (0.56 m) to reinforce the heat collection. The evaluation of the whole system performance is experimentally conducted by performing several variations of operating parameters and air channel depth. This photovoltaic-thermal (PV/T) system has modeled by a set of balanced energy equations that are resolved numerically using Matlab software. The experimental results show that the increase in the channel depth causes a significant reduction of thermal efficiency and a slight effect on the electrical one. The numerical data are compared and validated by the experimental results, where the characteristic curves (efficiencies, polarization, powers, temperatures) show good concordance with experimental data. The root means square of percentage deviation (RMSD) is between 1.75% and 16.25%. For a channel depth of 10 cm, the energy and exergy efficiency reach their mean values of 58.5% and 14.7%, respectively. The glass extension of 1.6 m gives a net improvement of 5% in the overall energy efficiency.

Khennoufa A, Bechki L, Lanez T, Lanez E and Zegheb N (2021), *"Spectrophotometric, voltammetric and molecular docking studies of binding interaction of N-ferrocenylmethylnitroanilines with bovine serum albumin"*, Journal of Molecular Structure. Vol. 1224 Elsevier B.V..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: We have studied the binding interaction of N-ferrocenylmethyl-2-nitroaniline (2FMNA), N-ferrocenylmethyl-3-nitroaniline (3FMNA), and N-ferrocenylmethyl-4-nitroaniline (4FMNA) with bovine serum albumin (BSA) by absorption spectroscopy, cyclic voltammetry, and molecular docking techniques. The results indicated that these derivatives could bind to BSA and cause conformational changes in the order 3FMNA > 2FMNA > 4FMNA. Molecular docking study indicated the preferred binding site, binding mode and further suggested that the binding mode of the three compounds to BSA is of hydrogen bonding and hydrophobic forces, moreover the compound 2FMNA additionally shows a π-π stacking interaction.

Khiari L, Boudjedaa T, Makhlouf A and Meftah M (2020), *"Berry phase for time-dependent coupled harmonic oscillators in the noncommutative phase space via path integral techniques"*, Journal of Siberian Federal University - Mathematics and Physics. Vol. 13(1), pp. 58-70. Siberian Federal University.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The purpose of this paper is the description of Berry's phase, in the Euclidean Path Integral formalism, for 2D quadratic system: two time dependent coupled harmonic oscillators. This treatment is achieved by using the adiabatic approximation in the commutative and noncommutative phase space.

Khodja L, Achour M and Zaim S (2020), *"Hartmann Potential with a Minimal Length and Generalized Recurrence Relations for Matrix Elements"*, Few-Body Systems. Vol. 61(2) Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In this work we study the Schrödinger equation in the presence of the Hartmann potential with a generalized uncertainty principle. We pertubatively obtain the matrix elements of the hamiltonian at first order in the parameter of deformation β and show that some degenerate states are removed. We give analytic expressions for the solutions of the diagonal matrix elements. Finally, we derive a generalized recurrence formula for the angular average values. © 2020, Springer-Verlag GmbH Austria, part of Springer Nature.

Lamache A, Doghri I, Jacques M and Boudjenah-Haroun S (2020), *"Characterization of bacterial biofilms isolated from drinking water distribution system in Southeastern Algeria [Étude des biofilms bactériens isolés à partir du système de distribution d'eau potable dans la région sud-est de l'Algérie]"*, Revue des Sciences de l'Eau. Vol. 32(4), pp. 447-461. Institut National de la Research Scientifique.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Article abstract This study attempted to determine the influence of the characteristics of drilling sources and materials used in drinking water distribution systems on the development of biofilms in pipe networks in southeastern of Algeria (Ouargla). Our samples were selected according to the aquifer, pipe material and age in this region. To carry out our experiments, we mechanically took 27 biofilm samples from several distribution pipes based on different types of materials: copper, polyvinyl chloride (PVC) and high-density polyethylene (HDPE), and from different aquifers (Albian, Senonian and Miopliocene). Several bacterial strains have been identified using the Matrix-Assisted Laser Desorption/Ionization-Time of Flight Mass Spectrometry (MALDI-TOF) technology. The results obtained demonstrate that copper pipes appear to be unfavorable to bacterial colonization while a wide variety of bacterial species has been found on PVC and HDPE materials. The capacity of the isolated straininto form biofilms has also been studied in vitro. The majority of the isolated strains, cultivated in simple and mixed biofilm, showed a strong capacity to form biofilms. © 2020, Institut National de la Research Scientifique. All rights reserved.

Lanez E, Bechki L and Lanez T (2020), *"Ferrocenylmethylnucleobases: Synthesis, dft calculations, electrochemical and spectroscopic characterisation"*, Chemistry and Chemical Technology. Vol. 14(2), pp. 146-153. Lviv Polytechnic National University.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Three ferrocenylmethylnucleobases (FcMeNb) were synthesized and characterized by cyclic voltam-metry, electronic absorption, FT-IR and NMR spectro-scopy. The energy of frontier molecular orbitals was determined using DFT/B3LYP method combined with 6-311++G(d,p) basis set in acetonitrile. The lower stan-dard rate constant values of the FcMeNb compounds as compared to ferrocene indicated slower electron transfer kinetics. Ó Lanez E., Bechki L., Lanez T., 2020.

Lekmine F, Temam H, Naoun M and Hadjadj M (2020), *"Mechanical characterization of electrodeposition of Ni-P alloy coating"*, Journal of Nano- and Electronic Physics. (1) Sumy State University.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The electrodeposition process plays a crucial role in the formation of thin films on materials, in particular, the electrodeposition of nickel-phosphorus because of its important properties. In this study, Ni-P coatings were deposited on X52 steel substrates by electrodeposition technique from a solution containing nickel sulfate, sodium hypophosphite (NaH_2PO_2). Composition, surface morphology, and mechanical properties of the Ni-P deposits were studied using SEM, EDAX, the Vickers method, weight loss and potentiodynamic polarization techniques. The effects of the current density were investigated on the surface morphology, phosphorus content, microhardness and corrosion of the coatings. It was observed that both the phosphorus content and microhardness are dependent on the current density. Results demonstrate that the morphology of the electrodeposited Ni-P alloys shows that the grains are spherical in nature for all the samples. It has been observed that the influence of current density on the P content of the deposit is an inverse relation with phosphorous content and also the as-plated coatings at current density of 5 A·m-4 exhibit the superior microhardness. Corrosion tests show that 5 A·m-4 is the best current density value which gives the best protection coating against corrosion. © 2020 Sumy State University.

Loudjani N, Gouasmia T, Bououdina M and Bobet J (2020), *"Phase formation and magnetic properties of nanocrytalline Ni70Co30 alloy prepared by mechanical alloying"*, Journal of Alloys and Compounds. Vol. 846 Elsevier Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Nanocrystalline Ni70Co30 alloy was synthesized by high energy ball alloying from elemental pure Ni and Co powders as function of milling time. The changes in structural, morphological and magnetic properties of the processed powders during mechanical alloying were characterized respectively by X-ray diffraction, scanning electron microscopy and vibrating sample magnetometer. X-ray diffraction analysis suggested the formation of two fcc nanostructured solid solutions fcc-Co(Ni) and fcc-Ni(Co), where the crystallite size decreases reaching 4.7–8.0 nm while the microstrain increases up to 0.39–0.42%, due to the severe plastic deformations and the structural defects introduced by milling. Morphological observations indicated a progressive refinement of the particles size with milling time. For longer milling, a narrow particle size distribution with irregular shape was observed. Milling process induced some important changes in the magnetic properties, whereas the variation of the saturation magnetization and coercivity was associated mainly to the particle size refinement, accumulation of microstrain and formation of solid solutions Co(Ni) and Ni(Co). © 2020 Elsevier B.V.

Mahboub S, Zerrouki D and Henni A (2020), *"Green synthesis and characterization of silver nanoparticles using Juniperus communis leaf extract: Catalytic activity in real-outdoor conditions and electrochemical properties"*, Applied Organometallic Chemistry. John Wiley and Sons Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The present study investigates the green synthesis of stable silver nanoparticles using Juniperus communis leaf aqueous extract at room temperature. Synthesized silver nanoparticles (AgNPs) were characterized with different techniques such as UV–vis spectroscopy, Fourier transforms infrared (FT-IR) spectroscopy, X-ray diffraction (XRD), Scanning electron microscopy (SEM-EDAX) and electrochemical method. Photocatalytic and anti-bacterial activities of synthesized AgNPs are evaluated based on the obtained result showed an efficient inhibition growth for gram negative P. Aeruginosa, E. Coli, and gram positive bacteria S.aureus. The AgNPs exhibited an excellent photocatalytic activity toward the degradation of methylene blue both indoor and outdoor, under sunlight, an efficiency of 95% was achieved. As an easy and environmentally friendly process, AgNPs based on Juniperus communis leaf extract could be applied for the degradation of pollutants and wastewater treatment. © 2020 John Wiley

& Sons, Ltd.

Medjaldi F, Bouabellou A, Bouachiba Y, Taabouche A, Bouatia K and Serrar H (2020), *"Study of TiO2, SnO2 and nanocomposites TiO2:SnO2 thin films prepared by sol-gel method: Successful elaboration of variable-refractive index systems"*, Materials Research Express. Vol. 7(1) Institute of Physics Publishing.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In this research TiO2, SnO2 and TiO2:SnO2 nanocomposite thin films were fabricated by the sol-gel dip coating technique. The mixture was prepared by varying the molar ratio of SnO2 to TiO2, i.e. TiO2:SnO2 (9:1), TiO2:SnO2 (8:2) and TiO2:SnO2 (6:4)). The obtained samples were characterized by means of the Raman microscopy, Scanning Electron Microscopy (SEM), UV-Vis spectrophotometry and m-lines spectroscopy (Prism coupler). Raman analysis shows that pure TiO2 and SnO2 thin films are characterized by the vibrational modes of anatase and rutile cassiterite, respectively. Furthermore, the Raman spectra of the TiO2:SnO2 nanocomposites show the presence of a mixture of anatase and rutile TiO2 phases. The SEM images reveal that the morphology is clearly modified with SnO2 content. The ripples in the transmittance spectra decreased with increasing SnO2 content. Also, the evolution of the optical band gap seems to be consistent with the Raman analysis. A great attention has been paid to the refractive index measurements by the prism coupler technique. In this way, variable-refractive index systems have been successfully obtained using TiO2:SnO2 nanocomposite thin films.

Meghni B, Ouada M and Saad S (2020), *"A novel improved variable-step-size P&O MPPT method and effective supervisory controller to extend optimal energy management in hybrid wind turbine"*, Electrical Engineering. Vol. 102(2), pp. 763-778. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This paper describes a new maximum power point tracking (MPPT) based on a variable structure “Automatic Systems approach” in order to modify and improve the conventional method perturb and observe. Therefore, the main contribution of this work is related to the developments in advanced control and management system applied to hybrid wind turbines (WT). The objective is to strengthen the extraction capacity of wind power in order to obtain an extended operational range “operating areas II and III.” In other terms, the multi-objective optimization on hybrid WT based on sophisticate control system and robust management reliable to hybrid WTs is performed to design a perfect control system. This system requires a very complicated adaptation between the second-order sliding mode control (SOSMC)-based speed control, a novel MPPT technique modified enhanced perturb and observe “MEPO,” system limitation and system energy storage. In addition, to improve the quality of the electrical energy introduced into the grid, a new efficient and robust strategy control based on direct power control-space vector modulation (DPC-SVM-SOSMC) implemented in the network side of the converter is proposed. The feasibility and effectiveness of the proposed control system and the new switching algorithm that coordinates the control (the multi-objective optimization) are validated under entire operating range (II and III). The results have showed that, compared with the conventional control system, the proposed scheme provides higher power conversion efficiency, offers better grid power quality and has better dynamic performances as well as a very robust adaptation against the uncertainties of the parameters and external disturbances.

Messatfa T, Chebbara F, Abdelkarim B and Abderrahim A (2020), *"A Simple Design of Printed Antenna with DGS Structure for UWB/SWB Applications"*, Lecture Notes in Networks and Systems. Vol. 102, pp. 284-291. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In this paper a circular microstrip patch antenna with Defected Ground Structure (DGS) has been designed and simulated for Ultra and Super Wide Band (UWB/SWB) applications by using the Computer Simulation Technology (CST). The aim of this work is to increase the bandwidth of an antenna by using (DGS). The total size of antenna is 25 × 30 mm2. This proposed antenna covers the frequency range of UWB and SWB for S11 < −10 dB was from 2.77 GHz to 30 GHz, this proposed antenna which gives a useful structure for modern wireless communication systems include point to point communication such as WVB (Wireless Video Broadcast), Satellite Communication and Radar Applications, WLAN applications “IEEE802.11a” in (5.12–5.825 GHz) and WiMAX system in (3.4–3.7 GHz) and for short range communication such as Biomedical applications. © 2020, Springer Nature Switzerland AG.

Mezabia M, Chacha D and Bensayah A (2020), *"Modelling of frictionless Signorini problem for a linear elastic membrane shell"*, Applicable Analysis. Taylor and Francis Ltd..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The purpose of this paper is the study of the asymptotic modeling of a linearly thin elastic isotropic membrane shell which is subjected to frictionless contact with a rigid obstacle on part of the boundary. Using the formal asymptotic expansions method, we obtain a two dimensional Signorini membrane shell model, then we justify the result by convergence theorem. © 2020 Informa UK Limited, trading as Taylor & Francis Group.

Miloudi R and Zerrouki D (2020), *"Encapsulation of phase change materials with alginate modified by nanostructured sodium carbonate and silicate"*, Iranian Polymer Journal (English Edition). Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The encapsulation of phase change materials (PCMs) as thermal energy storage materials is a big issue. PCM is usually encapsulated to avoid spillage, flammability and its reaction with the surrounding environment to improve its application. In the last decade, various methods have been employed and all kinds of microencapsulated PCM are produced. In this paper, we present a facile route to produce an encapsulated PCM with an organic and inorganic shell. The encapsulated phase change material (PCM) was prepared using a coaxial micro-fluidic system combined with an ionic cross-linking process. The alginate was used as the basic shell and a range of capsules was obtained by modifying the original shell using two inorganic components such as sodium carbonate and sodium silicate. Various samples, each with a different surrounding layer, were prepared by combining alginate calcium (Alg–Ca) as an organic shell with an inorganic component such as alginate calcium carbonate (Alg–CaCO3) and alginate calcium silicate (Alg–CaSiO3). In these experimental works, we have investigated the compatibility and the stability of capsules modified with the inorganic component. The scanning electron microscopy (SEM) technique and optical microscopy were utilized to study the capsule morphology. The chemical composition of the shell was evaluated by Fourier transform infrared spectroscopy (ATR-FTIR), thermogravimetry analysis and SEM coupled with the EDX analysis, and the capsule stability was estimated under an accelerated thermal cycling. © 2020, Iran Polymer and Petrochemical Institute.

Miloudi R and Zerrouki D (2020), *"Correction to: Encapsulation of phase change materials with alginate modified by nanostructured sodium carbonate and silicate (Iranian Polymer Journal, (2020), 29, 7, (543-550), 10.1007/s13726-020-00819-3)"*, Iranian Polymer Journal (English Edition). Vol. 29(7), pp. 551. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The article listed above was initially published with typo error in first author name. First author name corrected in original article. © 2020, Iran Polymer and Petrochemical Institute.

Mokhtara C, Negrou B, Bouferrouk A, Yao Y, Settou N and Ramadan M (2020), *"Integrated supply–demand energy management for optimal design of off-grid hybrid renewable energy systems for residential electrification in arid climates"*, Energy Conversion and Management. Vol. 221 Elsevier Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The growing research interest in hybrid renewable energy systems (HRESs) has been regarded as a natural and yet critical response to address the challenge of rural electrification. Based on a Bibliometric analysis performed by authors, it was concluded that most studies simply adopted supply-side management techniques to perform the design optimization of such a renewable energy system. To further advance those studies, this paper presents a novel approach by integrating demand–supply management (DSM) with particle swarm optimization and applying it to optimally design an off-grid hybrid PV-solar-diesel-battery system for the electrification of residential buildings in arid environments, using a typical dwelling in Adrar, Algeria, as a case study. The proposed HRES is first modelled by an in-house MATLAB code based on a multi-agent system concept and then optimized by minimizing the total net present cost (TNPC), subject to reliability level and renewable energy penetration. After validation against the HOMER software, further techno-economic analyses including sensitivity study are undertaken, considering different battery technologies. By integrating the proposed DSM, the results have shown the following improvements: with RF = 100%, the energy demand and TNPC are reduced by 7% and 18%, respectively, compared to the case of using solely supply-side management. It is found that PV-Li-ion represents the best configuration, with TNPC of 23,427 and cost of energy (COE) of 0.23 /kWh. However, with lower RF values, the following reductions are achieved: energy consumption (19%) and fuel consumption or CO2 emission (57%), respectively. In contrast, the RF is raised from 15% (without DSM) to 63% (with DSM). It is clear that the optimal configuration consists of wind-diesel, with COE of 0.21 $/kWh, smaller than that obtained with a stand-alone diesel generator system. The outcomes of this work can provide valuable insights into the successful design and deployment of HRES in Algeria and surrounding regions. © 2020 Elsevier Ltd

Mouassa S, Moulla A, Benhadj Tahar A, Teffahi M, Zaagane M, Benyoucef M and Brahmia N (2020), *"Geochemical and isotopic characterization of groundwater in the alluvial aquifer of Guelma (north-eastern Algeria)"*, Arabian Journal of Geosciences. Vol. 13(5) Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This study aims at determining the factors and the processes controlling groundwater quality, origin, and chemistry in the alluvial aquifer of Guelma northeastern of Algeria. Hydrochemical and isotopic investigations were carried out on 21 points, including boreholes, wells, springs, and surface waters in June 2016. A thorough hydrogeological investigation has revealed that groundwater is Ca–Mg/SO4–Cl facies. The combined use of geochemical tools and multivariate statistical analysis indicates that groundwater composition is largely governed by water-rock interactions, particularly the dissolution of evaporitic minerals as well as ion exchange processes. This study reports for the first time the isotopic contents (δ18O, δ2H) of the alluvial aquifer and the surface water. The stable isotope composition for the ground- and surfacewater samples has shown a homogeneous isotopic signature and reveals non-evaporated waters in the northern and central parts of the aquifer. This is the indication of the presence of a significant recharge by modern rainfall. Evaporated waters that are characterized by relatively enriched δ18O and δ2H contents are located in the western part of the plain. This suggests the occurrence of partial evaporation at the surface prior to, during, or after infiltration through the unsaturated zone. © 2020, Saudi Society for Geosciences.

Necib H and Necib B (2020), ***"Improve the calculation accuracy of the optimal insulation thickness in building walls as determined by a dynamic heat transfer model"*****, Asian Journal of Civil Engineering. Vol. 21(5), pp. 903-913. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: To improve the calculation accuracy of optimum insulation thickness of building walls, the effects of the initial conditions and the choice of the representative day used as boundary conditions on results have been studied. In this context, the unsteady heat transfer across the multilayer wall was considered as one-dimensional and the problem was solved numerically by an implicit finite difference method. A computational FORTRAN code has been developed and validated to calculate, under real meteorological data (RMD), the cooling transmission loads and the optimum insulation thickness during the summer period in the Sahara of Algeria. For steady periodic conditions, the influence of the initial conditions on the precision of the numerical result has been studied for two cases of representative days (July 15 and 21). By comparing the results with the case of real conditions (RMD), we find that the choice of July 15 as a typical day gives more accurate results than the choice of July 21. In addition, the difference of cooling transmission loads of 76.2% for July 15 and 76.31% for July 21 is observed, between the use of a repeated and another non-repeated typical day. © 2020, Springer Nature Switzerland AG.

Rakhrour W, Selloum D, Henni A, Cherrad N, Chikouche I, Benalia M, Mouffok S, Djedid M, Bouzar N and Tingry S (2020), ***"Electrochemical Synthesis of an Organometallic Material Based on Polypyrrole/MnO2 as High-Performance Cathode"*****, Journal of Inorganic and Organometallic Polymers and Materials. Springer.**
[Abstract] [BibTeX] [DOI] [URL]

Abstract: We report herein the design of promising composite material as a cathode in a rechargeable battery by combining the properties of polypyrrole (PPy) and MnO2 particles. The composites were prepared by electropolymerization of the pyrrole monomer followed by electrodeposition of a manganese salt suspension by two methods. The first method involved the formation of MnO2 in situ in the PPy/ITO electrode, while the second method involved first a preliminary adsorption of Mn2+ ions in the polymer, followed by an electrochemical of the electrode. The morphology of the resulting composite materials (PPy/MnO2) was studied by energy-dispersive X-ray spectroscopy (EDS), X-ray diffractometry (XRD), scanning electron microscopy (SEM), Fourier-transform infrared (FTIR). The investigations of the electrochemical properties of the composite electrodes show that the presence of MnO2 play an important role in improving the surface of polymer films, which leads to lower charge transfer resistance and higher electrode activity. For the optimal synthesis method, the electrode generates a maximum current of up to − 7.9 mA cm−2 for the oxygen reduction reaction, which is eight times the current density delivered by the electrode without PPy.

Rehouma F and Bentouila O (2020), *"Special glass for silver-sodium ion exchanged waveguides"*, Journal of King Saud University - Science. Vol. 32(1), pp. 433-435. Elsevier B.V..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In the present paper, we report an experimental study on a special glass developed for Ag^+-Na^+ ion-exchange. The glass composition and the influence of each element of the composition on the diffusion parameters were studied. Some parameters of exchange are determined, as well as the diffusion coefficient, refractive index variation, propagation and coupling losses. Such parameters can determine the fabrication conditions of integrated devices. The obtained waveguides have low coupling and propagation losses. The behavior of the fabricated waveguides at low temperatures is tested. It observed that, at these temperatures the diffusion is not negligible, which can affect the life time of the components. In order to improve this parameter, a modification of the amount of some elements of the glass composition is necessary, specially the alumina.

Rezgui I, Belloufi A and Mihi A (2020), *"Experimental investigation of the corrosion resistance of Ni-Al2O3 composite coatings obtained by electrodeposition"*, UPB Scientific Bulletin, Series B: Chemistry and Materials Science. Vol. 82(1), pp. 221-236. Politechnica University of Bucharest.
[Abstract] [BibTeX] [URL]

Abstract: This article aims to prepare Ni-Al2O3 composite coatings from a conventional electroplating process. The coatings development parameters taken into account for this study of the corrosion resistance of these coatings are: Al2O3 concentration, bath temperature and current. The experimental tests are carried out by two lost mass and polarization techniques. The objective of the work is to determine the influence of elaboration parameters on the corrosion resistance of Ni-Al2O3 composite coatings. The study carried out in this article has shown that the corrosion rate decreases with the increase of the production parameters.

Rezzag Bara R, Nicaise S and Merabet I (2020), *"Finite element approximation of a prestressed shell model"*, Mathematical Methods in the Applied Sciences. Vol. 43(7), pp. 4336-4352. John Wiley and Sons Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This work deals with the finite element approximation of a prestressed shell model formulated in Cartesian coordinates system. The considered constrained variational problem is not necessarily positive. Moreover, because of the constraint, it cannot be discretized by conforming finite element methods. A penalized version of the model and its discretization are then proposed. We prove existence and uniqueness results of solutions for the continuous and discrete problems, and we derive optimal a priori error estimates. Numerical tests that validate and illustrate our approach are given.

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ROUABAH B, TOUBAKH H and SAYED-MOUCHAWEH M (2020), *"Fault tolerant control of multicellular converter used in shunt active power filter"*, Electric Power Systems Research. Vol. 188 Elsevier Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Shunt active power filters (SAPF) topology based on multicellular converter are used in literature to compensate reactive power and mitigate harmonics generated by nonlinear loads with minimum voltage stress and reduced dv/dt, however a failure in switching devices or variation in parameters of multicellular converter injects a faulty current in electric power grid. This impacts power quality, increases mechanical vibrations, accelerates deterioration with increased temperature and can cause catastrophic damage in wind energy conversion system (WECS). Our contribution is the proposition of fault tolerant control (FTC) to increase the reliability of multicellular converter by the combining between multicellular topology and two-level topology. In this paper the multicellular converter is used as grid side converter (GSC) of wind energy conversion system (WECS) in order to mitigate harmonics generated by nonlinear load, minimize the mechanical vibrations, increase the performance and reliability of multicellular converter during switching devices failure and flying capacitor parameters variation. Simulation results demonstrate that total harmonic distortion (THD) of power grid current satisfies the limit of IEEE standard even when a fault occurs in switching devices or in flying capacitors of GSC. © 2020

Rouag A, Benchabane A, Mehdid C-E, Melhegueg M-A, Boultif N, Sellam S-H and Labed A (2020), *"Technical solution for malfunction of air coolers and condensers in hot climates: thermal design of a Geothermal Air-Cooler"*, Energy Sources, Part A: Recovery, Utilization and Environmental Effects. Taylor and Francis Inc..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The purpose of this study is to present a technical solution to avoid the malfunction of air coolers and condensers when the ambient temperature exceeds the operating limits of these systems. These critical climatic conditions are obtained especially during scorching temperatures in hot climates. First, this article describes this technical solution called Geothermal Air-Cooler (GAC). Second, to design the GAC components, a simple calculation methodology is presented and validated. A real dry cooling tower, available in the literature with its technical characteristics, was considered as a case study applied to the region of Biskra (Algeria). The GAC principle is to use an air mixer to couple a finned tubes heat exchanger (air condenser or dry cooling tower) with an Earth-Air Heat Exchanger, EAHE. The proposed calculation methodology uses an original model to estimate the soil radius surrounding the pipes, required to the EAHE design. Thermal design of the EAHE is validated using experimental data obtained in a previous research by the authors' team and good agreements were found (average relative error, ±0.99%). Results relating to the case study showed that the GAC can improve the operating limits of the conventional air conditioning systems to 57°C. Besides, for 0.75, 1.75 and 3.00 kg/s of fresh air mass flow rates, the GAC can increase the operating limit temperature of solar adsorption chiller to 42°C, 50°C, and 57°C, respectively. It has been shown that when a large heat transfer area of finned tubes is required, several EAHEs can be used together. Abbreviations: EAHE: Earth-air heat exchanger; EWHE: Earth-Water heat exchanger; GAC: Geothermal air-cooler. © 2020, © 2020 Taylor & Francis Group, LLC.

Sadek K, Aour B, Bennouna M, Talha A, Bouiadjra B and Bouanani M (2020), *"Effect of corrosion on the quality of repair of the aluminum Alloy A5083 H11 by bonded composites"*, Frattura ed Integrita Strutturale. Vol. 14(53), pp. 51-65. Gruppo Italiano Frattura.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: In this paper, the simultaneous effect of corrosion and cracking on the performance of the bonded composite patch repair in aluminum alloy A5083 marine structure was investigated using three-dimensional finite element methods. To this end, two patches made of carbon/epoxy and boron/epoxy, bonded on corroded plates with and without crack, were tested under different applied loads. The effect of both corroded and cracked materials on the damage of the adhesive FM73 was also highlighted. The obtained results show that the corrosion has a significant effect on the quality of the repair performance. Indeed, it is proved that, the rate of damage increases with the increase of the applied load and is more significant in the case of plates cracked and repaired by carbon/epoxy patch compared to that of boron/epoxy patches. © 2020, Gruppo Italiano Frattura. All rights reserved.

Sahouli S, Sanchez J, Gallego E and Khelil A (2020), *"Characterization and pathogenicity of fusarium proliferatum on date palms in Algeria."*, Pakistan Journal of Phytopathology. Vol. 32(1), pp. 33-40. Pakistan Phytopathological Society.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: During a survey conducted from 2013-2014, in order to determine the fungal agents of wilt and dieback of date palms (Phoenix dactylifera L.) from Ghardaia province in Southern Algeria, two Fusarium species; Fusarium oxysporum, Fusarium proliferatum and Thielaviopsis sp were identified based on their cultural and morphological characteristics. Fusarium proliferatum (Matsush.) Nirenberg ex Gerlach & Nirenberg was isolated and identified, and Koch's postulates were completed. Morphological identification was based on morphological characteristics on PDA and SNA culture media, and it was confirmed molecularly using ribosomal DNA sequence. Data comparison of the sequence (KR 856363) at GenBank revealed 100 % similarity to this fungal species. A phytopathogenicity test was carried out with 3 months old plants, and they were inoculated by dipping the roots into a fungal conidial suspension and also compared with Fusarium oxysporum f. sp. albedinis (Kill. & Maire) Malencon, known causal agent of date palm Fusarium wilt (Bayoud disease). After 90 days, disease incidence was eventually 76.66 % and 80 % for F. proliferatum and F. oxysporum, respectively, and the calculus of the index shows that this fungus would be a very serious threat to date palm. Microscopic observation of the roots provided confirmatory evidence that F proliferatum is causing a vascular disease on date palm. © 2017 Pak. J. Phytopathol.

Sayah Z, Kazar O, Lejdel B, Laouid A and Ghenabzia A (2020), *"An intelligent system for energy management in smart cities based on big data and ontology"*, Smart and Sustainable Built Environment. Emerald Group Publishing Ltd..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Purpose: This research paper aims at proposing a framework based on semantic integration in Big Data for saving energy in smart cities. The presented approach highlights the potential opportunities offered by Big Data and ontologies to reduce energy consumption in smart cities. Design/methodology/approach: This study provides an overview of semantics in Big Data and reviews various works that investigate energy saving in smart homes and cities. To reach this end, we propose an efficient architecture based on the cooperation between ontology, Big Data, and Multi-Agent Systems. Furthermore, the proposed approach shows the strength of these technologies to reduce energy consumption in smart cities. Findings: Through this research, we seek to clarify and explain both the role of Multi-Agent System and ontology paradigms to improve systems interoperability. Indeed, it is useful to develop the proposed architecture based on Big Data. This study highlights the opportunities offered when they are combined together to provide a reliable system for saving energy in smart cities. Practical implications: The significant advancement of contemporary applications (smart cities, social networks, health care, IoT, etc.) requires a vast emergence of Big Data and semantics technologies in these fields. The obtained results provide an improved vision of energy-saving and environmental protection while keeping the inhabitants' comfort. Originality/value: This work is an efficient contribution that provides more comprehensive solutions to ontology integration in the Big Data environment. We have used all available data to reduce energy consumption, promote the change of inhabitant's behavior, offer the required comfort, and implement an effective long-term energy policy in a smart and sustainable environment. © 2020, Emerald Publishing Limited.

Selloum D, Techer V, Henni A, Tingry S, Cretin M and Innocent C (2020), *"Performance comparison with different methods for ethanol/O2 biofuel cell based on NAD+ cofactor immobilized and activated by two types of carbon nanoparticles"*, Journal of Solid State Electrochemistry. Vol. 24(3), pp. 623-631. Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Biofuel cells are an attractive alternative to conventional fuel cells, because they use biological catalysts. We report in this article the construction of an ethanol/O2 enzymatic biofuel cell. In the first time, the performance comparison with different methods for ethanol/O2 biofuel cell has been study. Alcohol dehydrogenase, a nicotinamide adenine dinucleotide (NAD)-dependent enzyme, is immobilized with NAD+, diaphorase, and vitamin K3 (VK3) on the electrode. The oxygen is reduced at the cathode with laccase and 2,2'-azinobis(3-ethylbenzothiazoline-6-sulfonate) (ABTS). The performances of the electrodes are improved thanks to addition of carbon powder (KS6 and Super P® carbon). The benefit of the carbon particles with higher surface porosity was explained by the high-porous structure that offered a closer proximity to the reactive species and improved diffusion of ethanol and oxygen within the enzyme films. Efficiency of immobilization of NAD+ cofactor has been also demonstrated. We have shown the effect of multi-enzymatic reaction at the anode on the storage and operational stability. A high open-circuit potential has been recorded 1.02 V, demonstrating the benefit of NAD+ immobilization with maximal power density of 300 μW cm−2. Chronoamperometric measurements show a current density of 90 μA cm−2 during 20 h demonstrating the operational stability of the ethanol biofuel cell based on NAD+ cofactor immobilization. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Soudani M, Aiadi K and Bechki D (2020), *"Water heating by Parabolic Trough Collector with storage in the Ouargla region of Algerian Sahara"*, Materials Today: Proceedings. Vol. 24, pp. 137-139. Elsevier Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: The PTC is one of the most important solar concentrating systems, the most effective in producing steam in thermal power plants. In order to increase the efficiency of PTC, we did an experimental study has been performed based on the design and completion of a 1.8 m × 1.6 m PTC solar collector, with the addition of a flat glass cover in order to maintain the optical properties of the reflector and the glass envelope of dust, and moisture due to wind and rain on the one hand, and to increase thermal insulation and increase the thermal efficiency on the other hand. According to the solar radiation, and climatic conditions of Ouargla, we recorded the temperature of the outlet water and then calculate the thermal efficiency during the day, for different water flows. Where the experimental results showed the effectiveness of the glass cover by increasing the thermal efficiency to 9% during the peak period of radiation solar system (Soudani et al., 2017). In order to extend the results to different dimensions of PTC length and larger mass flows, we prepared a numerical simulation of the PTC model. After verifying the reliability of this model by comparing the numerical simulation results with the experimental results, we record the effect of PTC length and mass flow of water on outlet water temperature. To store this heat for the absence of the sun, we used a heat pump which is a thermo-chemical storage system, consisting of water as sorbet and sodium chloride as the sorbent, and then study the effect of different parameters on the performance of the thermo chemical heat pump. © 2019 Elsevier Ltd.

Toubakh H, Sayed-Mouchaweh M, Benmiloud M, Defoort M and Djemai M (2020), *"Self adaptive learning scheme for early diagnosis of simple and multiple switch faults in multicellular power converters"*, ISA Transactions. ISA - Instrumentation, Systems, and Automation Society.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This paper proposes a scheme based on the use of unsupervised machine learning approach and a drift detection mechanism in order to perform an early fault diagnosis of simple and multiple stuck-opened/stuck-closed switches in multicellular converters. Only the data samples representing the normal operation conditions are used in order to be adapted to the case where no data is available about faulty behaviors. A health indicator measuring the dissimilarity between normal and current operation conditions is built in order to detect a drift (degradations) in early stage. When a degradation (fault) is detected, the isolation is achieved by taking into account the discrete dynamics of switches. The features related to the latter are extracted in order to build a feature space allowing to separate the faulty behavior (zone or class) of the different switches. The proposed scheme is evaluated using real data samples representing different normal/simple/multiple switch fault scenarios issued from a test rig. © 2020 ISA

Zakaria B, Abdelhakim S and Bernard F (2020), *"Camel meat marketing and camel meat marketplace in the Algerian northern Sahara-case of the region of Souf"*, Emirates Journal of Food and Agriculture. Vol. 32(4), pp. 319-327. United Arab Emirates University.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: A field survey involving 62 camel butchers from Souf region the Algerian northern Sahara was implemented in order to establish a typology of camel butcher and collect data on camel meat marketing, the diversity in marketing practices and camel meat marketplace. The collected data allowed to identify 4 homogeneous groups of butchers well distinguished between them after cluster analysis. (specialized young camel butchers, non-specialized rural butchers, traditional non-specialized urban butchers, modern and old urban specialized butchers). The present study confirmed the predominance of beef meat compared to camel meat among consumers, camel meat consumption being less successful in its environment. In-depth studies on camel meat sector are mandatory to identify the bottlenecks invalidating the promotion of the camel meat consumption. © 2020, United Arab Emirates University.

Zatout M, Kadri M, Hacini M, Hamzaoui A and M’nif A (2020), *"Origin and signs of disturbance of hyperarid climate wetland ecosystem: case of Chott Ain Beida, Algerian Sahara"*, Environmental Earth Sciences. Vol. 79(8) Springer.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: Chott Ain Beida is an inland sabkha located in southern Algeria. Close to Ouargla city, it is surrounded by an exploited palm groove. In this study, modern climate of Ouargla region updated, surficial geology determined and geochemistry of its brines studied relative to geogenic factors and anthropogenic stress. Mean temperature increased by 2 °C, and thermal amplitude by 1.5 °C. The surficial lithology consists of eolian sand, evaporites and rich-organic matter clay. It is characterized by a rapid vertical and lateral changes which make some areas isolated and others communicating to drainage network and shallow/deep-water springs. This induced the heterogeneity of brines over the chott. The insulate areas show high total dissolved solids (> 230 g/L), high concentration factor (4 ÷ 8), high ionic strength (> 3), high Cl−/SO4 2 ratio (> 2.3) and high Mg2+/Ca2+ ratio (> 3), while the communicating areas present lower values of the same parameters. The diluted brines are Na+ + Mg2+ _sulfate and have undergone an evaporative concentration geochemical process while the concentrated others are Na+ + Mg2+ _chloride and show the cessation of evaporation process. The positive saturation indices reveled the occurrence of vaterite which is confirmed by the results of X-ray powder diffraction and energy-dispersive X-ray spectroscopy. Vaterite formation was possible after the combination of all the necessary reagents, namely presence of calcium, bicarbonate, phosphate, ammonium and carbone dioxide gas. These chemical reagents are provided by organic and mineral pollution. Vaterite formation begins with the presence of ammonium and remains more than 250 h before its transformation to calcite. Its formation sequestered important quantities of carbon dioxide. © 2020, Springer-Verlag GmbH Germany, part of Springer Nature.

Zatout M, López Steinmetz R, Hacini M, Fong S, M'nif A, Hamzaoui A and López Steinmetz L (2020), *"Saharan lithium: Brine chemistry of chotts from eastern Algeria"*, Applied Geochemistry. Vol. 115 Elsevier Ltd.
[Abstract] [BibTeX] [DOI] [URL]

Zitouni F, Harous S and Maamri R (2020), *"A Distributed Approach to the Multi-Robot Task Allocation Problem Using the Consensus-Based Bundle Algorithm and Ant Colony System"*, IEEE Access. Vol. 8, pp. 27479-27494. Institute of Electrical and Electronics Engineers Inc..
[Abstract] [BibTeX] [DOI] [URL]

Abstract: We propose a distributed approach to solve the multi-robot task allocation problem. This problem consists of two distinct sets: robots and tasks. The objective is to assign tasks to robots while optimizing a given criterion. This problem is known to be mathcal NP -hard even with small numbers of robots and tasks. The field of survivors' search and rescue is adopted: i.e. some Unmanned Aerial Vehicles are used to rescue a number of survivors. We choose this problem, given its importance in everyday life: (a) survivors are the tasks; (b) Unmanned Aerial Vehicles are the robots; and (c) the objective is to rescue the maximum number of survivors while minimizing the makespan (time elapsed between rescuing the

first and last survivors) and traveled distances. The approach is composed of two phases: inclusion and consensus. During the inclusion phase, each Unmanned Aerial Vehicle builds a bundle of survivors using the Ant Colony System. During the consensus phase, Unmanned Aerial Vehicles resolve conflicts in their bundles of survivors (i.e. a survivor is being chosen by more than two Unmanned Aerial Vehicles), using an adequate coordination mechanism. The approach is implemented using Java programming language and JADE multi-agent Framework. The performance of our approach is compared to five state-of-the-art multi-robot task allocation solutions. Simulation results show that the proposed approach outperforms these solutions, in terms of: (i) makespans; (ii) traveled distances; and (iii) exchanged messages. © 2013 IEEE.

Zitouni F, Harous S and Maamri R (2020), *"Towards a distributed solution to multi-robot task allocation problem with energetic and spatiotemporal constraints"*, Computer Science. Vol. 21(1), pp. 3-24. AGH University of Science and Technology Press.
[Abstract] [BibTeX] [DOI] [URL]

Abstract: This paper tackles the Multi-Robot Task Allocation problem. It consists of two distinct sets: a set of tasks (requiring resources), and a set of robots (offering resources). Then, the tasks are allocated to robots while optimizing a certain objective function subject to some constraints; e.g., allocating the maximum number of tasks, minimizing the distances traveled by the robots, etc. Previous works mainly optimized the temporal and spatial constraints, but no work focused on energetic constraints. Our main contribution is the introduction of energetic constraints on multi-robot task allocation problems. In addition, we propose an allocation method based on parallel distributed guided genetic algorithms and compare it to two state-of-the-art algorithms. The performed simulations and obtained results show the effectiveness and scalability of our solution, even in the case of a large number of robots and tasks. We believe that our contribution is applicable in many contemporary areas of research such as smart cities and related topics. © AGH University of Science and Technology Press.