

Title	Green Bio-organic and Recoverable Catalyst Taurine (2-aminoethanesulfonic acid) for Synthesis of Bio-active Compounds 3,4-Dihydropyrimidin Derivatives in Aqueous Medium.
Authors	Abd El Aleem Ali Ali El-Remaily, M., Elhady, O.M.
Journal	ChemistrySelect 5(39), pp. 12098-12102
Abstract	A highly green bio-organic catalyst known as Taurine (2-aminoethanesulfonic acid) is plentifully in the tissues of humans and animals and is an efficient and environmentally benign catalyst for the one-pot multicomponent reaction synthesis of bio-active 3,4-dihydropyrimidin-2(1H)-ones/thiones (Biginelli Reaction) in aqueous medium. The advantages of this protocol by way of the Taurine catalyst are that it is eco-friendly, commercially available, low cost, has high reusability, short reaction times, high yields and the products obtained high purities without using any organic solvents.

Title	Novel synthesized cationic surfactants based on natural piper nigrum as sustainable-green inhibitors for steel pipeline corrosion in CO₂-3.5%NaCl: DFT, Monte Carlo simulations and experimental approaches
Authors	Tantawy, A.H., Soliman, K.A., Abd El-Lateef, H.M.
Journal	Journal of Cleaner Production 250,119510
Abstract	CO₂-Corrosion is a widespread issue in oil and gas production, and various storage media have different impacts on the corrosion performance of steel used for tubes. In this paper, three novel cationic surfactants based on natural piper nigrum for inhibiting CO₂-corrosion have been synthesized. The structure configurations of the prepared surfactants were confirmed by various spectral and physico-chemical tools viz. FTIR, 1H NMR, 13C NMR and surface activity measurements. The measurement of contact angles was used to evaluate the wettability of all synthesized surfactants. The inhibition capacities of the titled surfactants, for steel pipelines (C1018-steel) corrosion in CO₂-3.5%NaCl were studied by electrochemical (open-circuit potential vs. time, Tafel and EIS) measurements, surface morphology (FE-SEM/EDX) examinations, DFT, and Monte Carlo simulations. The empirical findings indicated that the prepared natural surfactants had superior inhibition action, and their maximum inhibition capacities were ranged from 96.7 to 98.9%. Tafel data displays the features of these surfactants are considered as inhibitors of the mixed-type; and their adsorption mode on the C1018-steel/medium interface is consistent with the Langmuir isotherm model. The formation of a protective layer on the C1018-steel interface was investigated using FE-SEM/EDX. DFT calculations were carried out to correlate theoretical parameters with experimental outcomes. The Monte Carlo simulations affirm the adsorption capability of the synthesized surfactants on the iron (110) crystal. The present report provides extremely significant findings in preparing and designing novel sustainable-green inhibitors with high inhibition power.

Title	Green Method for the Synthetic Ugi Reaction by Twin Screw Extrusion without a Solvent and Catalyst
Authors	Ali El-Remaily, M.A.E.A.A., Soliman, A.M.M., Elhady, O.M.
Journal	ACS Omega 5(11), pp. 6194-6198
Abstract	This study describes the solvent and catalyst-free Ugi reaction by way of twin screw extrusion (TSE). Multicomponent chemical synthesis can be converted into a single process without repeated use of solvents through TSE. High synthetic yields are achieved in short reaction times and produced in solvent-free conditions, which lead to a more environmentally friendly process.
Title	Optimization of the synthesis of het/aryl-amidoximes using an efficient green chemistry
Authors	Albayati, M.R., Mohamed, M.F.A., Moustafa, A.H.
Journal	Synthetic Communications 50(8), pp. 1217-1231
Abstract	This work focuses on optimizing an efficient green synthesis of arylamidoximes from appropriate nitrile and hydroxylamine hydrochloride in water and triethylamine (1.6 mol equivalent) as a base at room temperature for 6 h. This new green synthetic methodology is compared with previously known methods. The main advantages of this new process reported are good yield, easier work-up and short reaction times. Moreover, some of the synthesized arylamidoximes converted to 1,2,4-oxadiazole derivatives 13a,b and 14 via the reaction with (4-acetylphenoxy)acetic acid 12.

Title	Dynamical analysis and chaos control of the fractional chaotic ecological model
Authors	Mahmoud, E.E., Trikha, P., Jahanzaib, L.S., Almaghrabi, O.A.
Journal	Chaos, Solitons and Fractals 141,110348
Abstract	In this paper the fractional version of the proposed integer order chaotic ecological system is studied. Here chaos has been observed in the competitive ecological model due to linear and nonlinear interactions among various species considering shortage of food resources. The system being important constituent of the food supply chain is analyzed using tools of dynamics viz. Lyapunov dynamics, bifurcation diagrams, existence and uniqueness of solution, the fixed point analysis and effect of fractional order on the dynamics of the system. In the presence of uncertainties and disturbances the chaos in the F.O. ecological model is controlled using adaptive SMC theory about its two fixed points. Numerical illustrations have been provided using MATLAB.

Title	A modified harmonic balance method to obtain higher-order approximations to strongly nonlinear oscillators
Authors	Hosen, M.A., Chowdhury, M.S.H., Ismail, G.M., Yildirim, A.
Journal	Journal of Interdisciplinary Mathematics 23(7), pp. 1325-1345
Abstract	<p>We propose a new method, namely, the modified harmonic balance method. This paper also analyses and offers the high-order approximate periodic solutions to the strongly nonlinear oscillator with cubic and harmonic restoring force. The existing harmonic balance method cannot be applied directly to such kind of nonlinear oscillators in the presence of forcing term. It is possible if we rewrite the original form of the nonlinear oscillators. If we do so, the results are valid only for small values of amplitude of the oscillation. Moreover, after applying the existing harmonic balance method, a set of complicated higher-order nonlinear algebraic equations are obtained. Analytical investigation of these equations is cumbersome especially when the amplitude of the oscillation is large. These limitations are removed in the proposed method. In addition, a suitable truncation principle has also been used in which the solution achieves better results than existing solutions. The approximate results agree well with numerically obtained exact solutions. Highly accurate results and a simple solution procedure are the advantages of this proposed method, which could be applied to other nonlinear oscillatory problems arising in nonlinear science and engineering.</p>

Title	Structure and optical properties of thermally evaporated Te doped ZnSe thin films
Authors	Hasaneen, M.F., Ali, H.M., Abd El-Raheem, M.M., Abdel Hakeem, A.M.
Journal	Materials Science and Engineering B: Solid-State Materials for Advanced Technology 262,114704
Abstract	The cooled pressing method is used for preparing $(\text{ZnSe})_{1-x}\text{Te}_x$ chalcogenide glasses. The thermal evaporation technique is utilized for depositing the thin films. Topological calculations reveal the obvious effect of doping Te content on the average coordination number Z, parameter determines the deviation from stoichiometry r, glass transition temperature T_g, number of lone-pair electrons L and heat of atomization H_s. Swanepoel's approach is used to estimate the refractive index and the average thickness of the films with high accuracy. The addition of tellurium as an impurity found to has a great influence on the optical parameters such as refractive index, energy band gap E_g, Urbach energy E_u, refractive index n, single oscillator energy E_o, dispersion energy E_d, free-electron concentration N, and plasma frequency, ω_p.

Title	Information gain in environmental monitoring through bioindication and biomonitoring methods ("B & B technologies") and phytoremediation processes-with special reference to the Biological System of Chemical Elements (BSCE) under specific consideration of Lithium
Authors	Markert, B., Abdallah, N., Aksoy, A., (...), Wolterbeek, B., Wünschmann, S.
Journal	Bioactive Compounds in Health and Disease 3(11), pp. 214-250
Abstract	<p>Different definitions for the concepts of information, information transfer, i.e. communication and its effect and efficiency of false, but also correct information, especially from the environmental sector, are given. "THE TEN ECOLOGICAL COMMANDMENTS" developed by Menke-Glückert at the end of the 1960s, the 9th commandment "Do not pollute information", in particular, is examined in more detail and understood practically as a currently unchanging law in our existing world societies. The "Ethics Consensus", derived from "THE TEN ECOLOGICAL COMMANDMENTS" and developed by Markert at the end of the 1990s, reflects both theoretical and practical levels of action that many people in our highly diverse world societies can support. From a scientific point of view, this article deals with the so-called B & B technologies, i.e. bioindication and biomonitoring of chemical elements, their chemical speciation as well as organic substances. B & B technologies, which deals with the biological detection of atmospheric deposition of chemical substances on a regional, national, and international level, are taken into account. From both an academic and a practical point of view, mosses have prevailed here in the last decades in addition to lichens. The use of mosses is a major focus of international air monitoring, especially in Europe. Furthermore, the phytoremediation of chemical substances in water, soil and air is described as a biological and sustainable biological process, which does not yet have the full scope as it is used in bioindication and biomonitoring, as shown in the example of mosses. However, the phytoremediation is considered to be an excellent tool to have the leading role in the sustainable pollutant "fight". In the future qualitative and quantitative approaches have been further developed to fit scientifically and practically B&B Technologies as well the different forms of phytotechnological approaches. Finally, the example of lithium, which is optionally derived from the Biological System of Chemical Elements (BSCE), becomes a chemical example that the administration of lithium to ALL mentally conditioned diseases such as manic depression to smoking cigarettes becomes one of the most valuable services for the recovery of human society on a global level. As a conclusion of these tremendous effects of lithium can be considered: Pulled out, to make clear that only this chemical element beside a psychiatric care and the involvement of family members, friends, physicians, psychologists and psychiatrists. In addition, it is a must that there is a strong relationship between patient, psychiatrist(s) and strongly related persons to the patient. First an intensive information transfer via communication must be guaranteed. After it, psychological support by doctors and, only if it seems necessary Lithium is to be given in a patient specific dose.</p>

Title	Responses of Eucalyptus globulus and Ficus nitida to different potential of heavy metal air pollution
Authors	El-Khatib, A.A., Youssef, N.A., Barakat, N.A., Samir, N.A.
Journal	International Journal of Phytoremediation 22(10), pp. 986-999
Abstract	The present study aimed to explore the tolerance potential of Cd, Pb and Cu and physiological alterations in two common tree species growing in Minia governorate (Egypt) namely: Eucalyptus globulus and Ficus nitida and to investigate the leaf features [leaf area (LA) and specific leaf area (SLA)] associated with the phytoremediation process. The findings may be useful for future surveillance as preliminary reference values for levels of heavy metals in urban and industrial settings. The levels of cadmium, lead and Copper in plant leaf were determined. The results showed that heavy metals could inhibit the growth of plants including LA and SLA. The water content (WC) and photosynthetic pigments of Eucalyptus and Ficus decreased with the increased concentration of metals. Contrary to chlorophylls (a) and (b), carotenoids and chlorophyll ratio (a/b) showed a significant increase with increasing metals concentration especially that of Cd and Cu. Proline content was relatively increased and soluble carbohydrate content decreased in plants with high metal accumulation. Eucalyptus showed better tolerance capacity for Cd, Pb and Cu when compared to Ficus. The ability of Eucalyptus to accumulate and tolerate metal stress makes this species a good candidate to recuperate heavy metals-contaminated conditions.

Title	Solar light-assisted remediation of domestic wastewater by NB-TiO₂ nanoparticles for potable reuse
Authors	Abdelraheem, W.H.M., Nadagouda, M.N., Dionysiou, D.D.
Journal	Applied Catalysis B: Environmental 269,118807
Abstract	Water reuse has become a worldwide necessity due to scarcity of fresh water supplies. Recently, advanced oxidation processes (AOPs) has been incorporated into water reuse treatment train to destroy residual organics in water before its discharge. Yet, the currently applied ultraviolet/H₂O₂ AOP is associated with high electrical demand by the UV process in addition to transport and storage problems of H₂O₂. Accordingly, the current work investigates the use of solar light/NB-TiO₂ as an efficient AOP for water reuse industry. The technology was developed and tested for degradation of five contaminants of emerging concern (CECs) spiked in Milli-Q water and different wastewater samples. All CECs were successfully removed from individual and quinary systems, even in presence of natural levels of common inorganic quenching agents. Roles of different reactive species involved on the degradation of CECs were explored. Using mass spectroscopy, transformation products from CECs degradation were identified and degradation pathways were hypothesized.

Title	Removal of heavy metals from wastewater by natural growing plants on river Nile banks in Egypt
Authors	Abd-Elaal, A.-E.M., Aboelkassem, A., Gad, A.A.M., Ahmed, S.A.S.
Journal	Water Practice and Technology 15(4), pp. 947-959
Abstract	Green remediation is a known technology that uses different types of plants to extract contaminants from the environment. This study aims to remove heavy metals from treated wastewater by using natural growing plants on River Nile banks in Egypt. Secondary treated effluent was collected from West Gerga wastewater treatment plant, located in Sohag city, Egypt. Experiments using two types of aquatic plants were carried out. They were planted individually and in combination with different densities on the secondary treated wastewater surface for 10 days' retention time to remove cadmium (Cd), nickel (Ni) and lead (Pb). It was concluded that both plants have high capabilities to remove heavy metals directly from treated wastewater. The removal efficiency of Cd and Pb was higher when they were planted together than when individually planted. A positive relationship was observed between detention time and heavy metals removal. The removal efficiency of heavy metals increased with the increase of plant density for both plant types. Also, the availability of aquatic plants and their free cost makes their use an economically attractive alternative. In addition, the removal of these plants from River Nile improves the performance of water distribution networks in Egypt.

Title	Bioaccumulation of heavy metals air pollutants by urban trees
Authors	El-Khatib, A.A., Barakat, N.A., Youssef, N.A., Samir, N.A.
Journal	International Journal of Phytoremediation 22(2), pp. 210-222
Abstract	<p>Leaf and bark of trees are tools for assessing the effects of the heavy metals pollution and monitoring the environmental air quality. In this study, the possibility of using leaves and bark of two urban trees, namely, <i>Ficus nitida</i> and <i>Eucalyptus globulus</i> as a bioindicator of atmospheric pollution was evaluated by determining the composition of heavy elements in the tree leaves, bark, soil, and the atmospheric dust. Two common tree species, namely, <i>F. nitida</i> and <i>E. globulus</i> were selected in the heavily industrial zone of surrounding Minya governorate, Upper Egypt. Two urban areas with heavy traffic load (sites 1 and 2), three industrial zones (sites 3, 4, and 5) and an uncontaminated area as a control were selected (site 6). Sampling from leaf, bark, soil, deposited dust of trees was carried out in winter and summer seasons (from November 2016 to March 2017). The concentrations of heavy metals in dust, soil, leaves, and bark possess the same trend: $Pb > Cu > Cd$. The highest concentration of cadmium, lead, and copper was found in the leaf of <i>F. nitida</i> and <i>E. globulus</i> higher than bark samples of the studied species, supporting the idea suggesting that tree leaves can be used as a good indicator of heavy metals accumulation. A high and statistically significant correlation ($p < .05$) was found between Pb concentrations in the atmospheric dust and those in the leaves of both species throughout the two growing seasons, confirming that the main source of incorporated Pb is the atmospheric dust. Otherwise, the obtained results showed that <i>F. nitida</i> tree does not seem to be a good accumulator of Cu. According to the obtained results, <i>F. nitida</i> and <i>E. globulus</i> trees are more likely to capture cadmium and lead from air, so planting these trees in industrial areas with such atmospheric pollutants would be beneficial.</p>

Title	Corrosion inhibition and adsorption features of novel bioactive cationic surfactants bearing benzenesulphonamide on C1018-steel under sweet conditions: Combined modeling and experimental approaches
Authors	Abd El-Lateef, H.M., Shalabi, K., Tantawy, A.H.
Journal	Journal of Molecular Liquids 320,114564
Abstract	In this report, three novel sulphonamides based cationic surfactants have been produced, and their structure configurations were clarified by various spectroscopic approaches (13C and 1H NMR). The corrosion protection characteristics of the as-prepared compounds for C1018-steel in carbon dioxide saturated 3.5% NaCl has been inspected and categorized by weight loss, Tafel polarization (PDP), electrochemical impedance spectroscopy (EIS), X-ray photoelectron spectroscopy (XPS), field emission-scanning electron microscopy (FE-SEM), and energy-dispersive X-ray spectroscopy (EDX) methods. Furthermore, conductivity and surface-active features were applied to examine their micellization and adsorption. The outcomes exhibited that these bioactive inhibitors at low doses had a worthy protection capacity on C1018-steel corrosion under sweet conditions ranged from 94.5 to 99.5% at 5×10^{-4} M additive concentration. PDP profiles display that the as-prepared surfactants were mixed inhibitors, and their adsorption followed the Langmuir isotherm model. FESEM, EDX, and XPS examinations demonstrated the formation of a protecting film adsorbed surfactant at metal/medium interface. DFT calculations, Monte Carlo (MC) simulations, molecular electrostatic potential (MEP), Fukui indices, and Mulliken atomic charges were accomplished to support empirical outcomes, and deliver suitable insight into the adsorption features and the corrosion inhibition mechanisms of the titled surfactants.

Title	Assessment the seasonal variability and enrichment of toxic trace metals pollution in sediments of damietta branch, Nile river, Egypt
Authors	Redwan, M., Elhaddad, E.
Journal	Water (Switzerland) 12(12),3359
Abstract	<p>This work appraises the extent of toxic trace metals and seasonal pollution degree in Damietta branch sediments of the River Nile of Egypt. The toxic trace metals Fe, Mn, Cd, Co, Cu, Ni, Pb, and Zn were analysed in sediments from six sites during the summer and winter seasons. The metal concentrations and organic matter were determined using inductively-coupled-plasma mass spectrometry and loss-on-ignition, respectively. Multivariate statistical methods were used in order to allocate the possible metals sources and their relationships in sediments. The seasonal mean sequence of toxic trace metals was: Fe > Mn > Zn > Pb > Cu > Ni > Co > Cd. The mean Cd, Pb, and Zn values exceeded the sediment quality guidelines and average shale and they represent severe potential toxicity for aquatic organisms. Cu and Co were enriched during winter. The geo-accumulation index stipulated that metal pollution degree in the sequence of: Pb > Zn > Cd > Co > Cu > Mn > Ni > Fe. The highest metal pollution index reported in winter in sites S4/S5 and during summer in sites S4–S6. Different agricultural, wastewater discharge, fisheries, and industrial activities, as well as the effect of dilution/concentration during summer/winter seasons, are the main factors that contributed to metal accumulations in Damietta branch sediments. Continuous monitoring and evaluation of toxic trace metal concentrations of the Damietta sediments and similar localities worldwide can help to protect the ecosystem from harmful metal contaminations.</p>

Title	Green Synthesis of AgNPs() Utilizing Delonix Regia Extract as Anticancer and Antimicrobial Agents**
Authors	Abu-Dief, A.M., Abdel-Rahman, L.H., Abd-El Sayed, M.A., Zikry, M.M., Nafady, A.
Journal	ChemistrySelect 5(42), pp. 13263-13268
Abstract	<p>Silver is an effective antimicrobial agent with low toxicity, which is important especially in the treatment of burn wounds where transient bacteremia is prevalent. In this research, the green method was employed to synthesis silver nanoparticles (AgNPs). The synthesized AgNPs were characterized using IR, XRD, DLS and UV/Visible Spectrophotometry. XRD pattern of AgNPs has a face-centered cubic (FCC) form and crystalline lattice with a crystallite size of 12 nm. FT-IR spectra indicate the functional groups of phytochemical compounds at Delonix regia extract DRE and AgNPs. DLS showed the distribution of average particle size of AgNPs that have 11 nm mean size of the particle. The prepared AgNPs were screened for their cytotoxic effect against colon carcinoma cells (HCT- 116 cell line), hepatic cellular carcinoma cells (HepG-2) and breast carcinoma cells (MCF-7). The cytotoxic effect of AgNPs is close to the cytotoxic effect of Doxorubicin standard drug. The toxicity of the AgNPs was tested on bacterial species such as Gm (+) positive bacteria (Bacillus subtilis) and Gm (-) negative bacteria (Serrati amarcescence and Escherichia coli) and fungal species such as Candida albicans, Getrichm candidum and Aspergillus flavus. The antimicrobial activity of AgNPs was greater towards Gm (+) positive bacteria compared to Gm (-) negative bacteria. These biological activities of the synthesized AgNPs could be promised to use it as a drug.</p>

Title	Mapping Asia plants: Current status on floristic information in Southwest Asia
Authors	Xu, X., Naqinezhad, A., Ghazanfar, S.A., (...), Seyfullayev, F., Ma, K.
Journal	Global Ecology and Conservation 24,e01257
Abstract	<p>Mapping Asia Plants (MAP) is a comprehensive project that aims to build a detailed infrastructure for integrating Asian plant distribution data a global-scale array of knowledge for plant biodiversity conservation. Here, we provide a brief historical review of botanical research in Southwest Asia – an understudied botanical region with high conservation priority. Nineteen countries were included in this study (from west to east): Turkey, Cyprus, Palestine, Israel, Jordan, Saudi Arabia, Lebanon, Syria, Iraq, Georgia, Yemen, Armenia, Iran, Azerbaijan, Kuwait, Bahrain, Qatar, United Arab Emirates, and Oman. We reviewed 132 resources comprising 125 Floras and Checklists, of which we describe in some detail at least one of the most important Floras or Checklists for each country. Complete and published national Floras exist for 13 countries; three countries (Jordan, Israel and Bahrain) do not have a Flora but have annotated Checklists, and national Floras are at different stages of completion for Iran, Iraq and Georgia. Where present, online resources are also given for references. We found major gaps in species concepts and taxonomic classification systems, and that many up-to-date Flora revisions remained unresolved, i.e. taxon ranks and species concepts varied among different countries, different systems were adopted or followed in the taxonomic treatments in the Floras and Checklists, and some of the current Floras are out of date. Floras are the first necessary step for many fields, including evolutionary biology, ecology, biogeography, and systematics, as well as environmental research and conservation of biodiversity at national and international levels. Here, we provide the progress updates on the main published floristic works of Southwest Asia, which continue to serve as references for the Flora of Southwest Asia, and will be the foundation of the MAP project.</p>