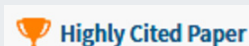


ISI Papers in highlight

Web of Science - Clarivate Analytics Highly Cited Papers

Selected from the most recent 10 years of data, Highly Cited Papers reflect the top 1% of papers by field and publication year. Highly Cited Papers help identify breakthrough research within a research field and are used within Web of Science to identify and refine the most influential research papers.

Boldea, I., Tutelea, L.N., Parsa, L., Dorrell, D. Automotive Electric Propulsion Systems With Reduced or No Permanent Magnets: An Overview, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, Volume: 61, Issue: 10, Pages: 5696-5711, ISSN: 0278-0046, eISSN: 1557-9948, 2014;
Times Cited in Web of Science Core Collection: 299



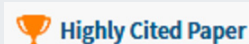
Precup, R.E., Hellendoorn, H. A survey on industrial applications of fuzzy control, COMPUTERS IN INDUSTRY, Volume: 62, Issue: 3, Pages: 213-226, ISSN: 0166-3615, eISSN: 1872-6194, 2011;
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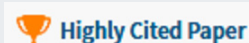
Sarbu, I., Sebarchievici, C. General review of ground-source heat pump systems for heating and cooling of buildings, ENERGY AND BUILDINGS, Volume: 70, Pages: 441-454, ISSN: 0378-7788, eISSN: 1872-6178, 2014;
Times Cited in Web of Science Core Collection: 214



Marinca, V., Herisanu, N., Bota, C., Marinca, B. An optimal homotopy asymptotic method applied to the steady flow of a fourth-grade fluid past a porous plate, APPLIED MATHEMATICS LETTERS, Volume: 22, Issue: 2, Pages: 245-251, ISSN: 0893-9659, 2009;
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Gheju, M., Balcu, I. Removal of chromium from Cr(VI) polluted wastewaters by reduction with scrap iron and subsequent precipitation of resulted cations, JOURNAL OF HAZARDOUS MATERIALS, Volume: 196, Pages: 131-138, PubMed ID: 21955659, ISSN: 0304-3894, 2011;
Times Cited in Web of Science Core Collection: 152



Precup, R.E., David, R.C., Petriu, E.M. Grey Wolf Optimizer Algorithm-Based Tuning of Fuzzy Control Systems With Reduced Parametric Sensitivity, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, Volume: 64, Issue: 1, Pages: 527-534, ISSN: 0278-0046, eISSN: 1557-9948, 2017;
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Gheju, M., Balcu, I., Mosoarca, G. Removal of Cr(VI) from aqueous solutions by adsorption on MnO₂, JOURNAL OF HAZARDOUS MATERIALS, Volume: 310, Pages: 270-277, PubMed ID: 26947189, ISSN: 0304-3894, eISSN: 1873-3336, 2016;
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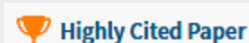
Highly Cited Papers received enough citations as of January/December 2019 to place them in the top 1% of their academic fields based on a highly cited threshold for the field and publication year.

* The data was obtained from Web of Science - Clarivate Analytics in 25 May 2020

Web of Science - Clarivate Analytics Highly Cited Paper

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Times Cited in Web of Science Core Collection: 80



Ancuti, C.O., Ancuti, C., De Vleeschouwer, C., Bekaert, P. Color Balance and Fusion for Underwater Image Enhancement, IEEE TRANSACTIONS ON IMAGE PROCESSING, Volume: 27, Issue: 1, Pages: 379-393, PubMed ID: 28981416, ISSN: 1057-7149, eISSN: 1941-0042, 2018;
Times Cited in Web of Science Core Collection: 60



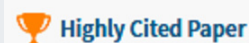
Sarbu, I., Dorca, A. Review on heat transfer analysis in thermal energy storage using latent heat storage systems and phase change materials, INTERNATIONAL JOURNAL OF ENERGY RESEARCH, Volume: 43, Issue: 1, Pages: 29-64, ISSN: 0363-907X, eISSN: 1099-114X, 2019;
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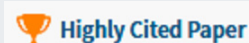
Linul, E., Marsavina, L., Linul, P.A., Kovacic, J. Cryogenic and high temperature compressive properties of Metal Foam Matrix Composites, COMPOSITE STRUCTURES, Volume: 209, Pages: 490-498, ISSN: 0263-8223, eISSN: 1879-1085, 2019;
Times Cited in Web of Science Core Collection: 20



Istratie, R., Stoia, M., Pacurariu, C., Locovei, C. Single and simultaneous adsorption of methyl orange and phenol onto magnetic iron oxide/carbon nanocomposites, ARABIAN JOURNAL OF CHEMISTRY, Volume: 12, Issue: 8, Pages: 3704-3722, ISSN: 1878-5352, eISSN: 1878-5379, 2019;
Times Cited in Web of Science Core Collection: 20



Gheju, M., Balcu, I. Sustaining the efficiency of the Fe(0)/H₂O system for Cr(VI) removal by MnO₂ amendment, CHEMOSPHERE, Volume: 214, Pages: 389-398, PubMed ID: 30268895, ISSN: 0045-6535, eISSN: 1879-1298, 2019;
Times Cited in Web of Science Core Collection: 12



Duma, V.F., Schitea, A. LASER SCANNERS WITH ROTATIONAL RISLEY PRISMS: EXACT SCAN PATTERNS, PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE, Volume: 19, Issue: 1, Pages: 53-60, ISSN: 1454-9069, 2018;
Times Cited in Web of Science Core Collection: 10

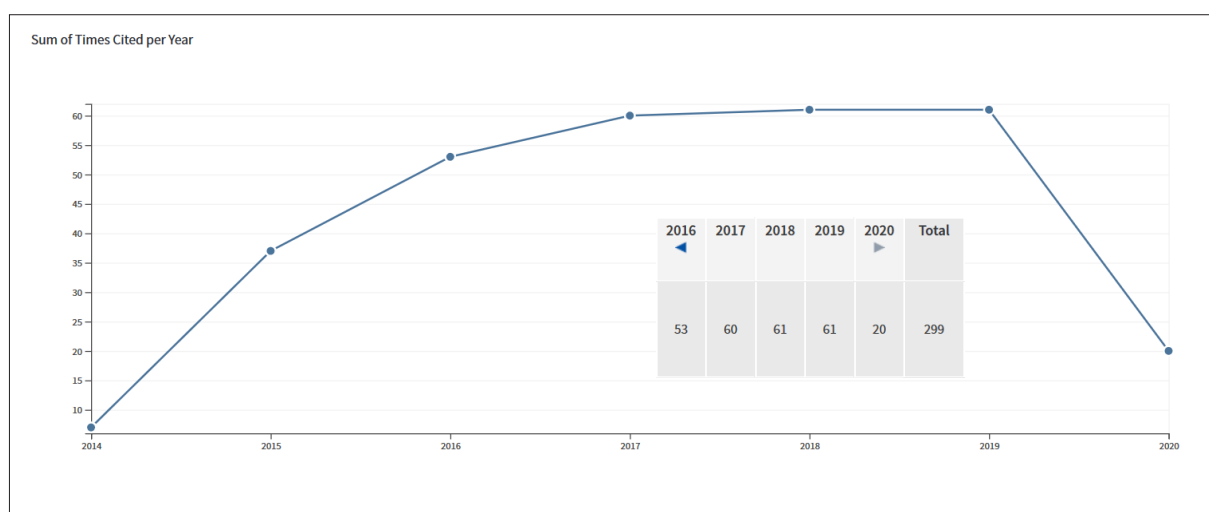


Highly Cited Papers received enough citations as of January/December 2019 to place them in the top 1% of their academic fields based on a highly cited threshold for the field and publication year.

*The data was obtained from Web of Science - Clarivate Analytics in 25 May 2020

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



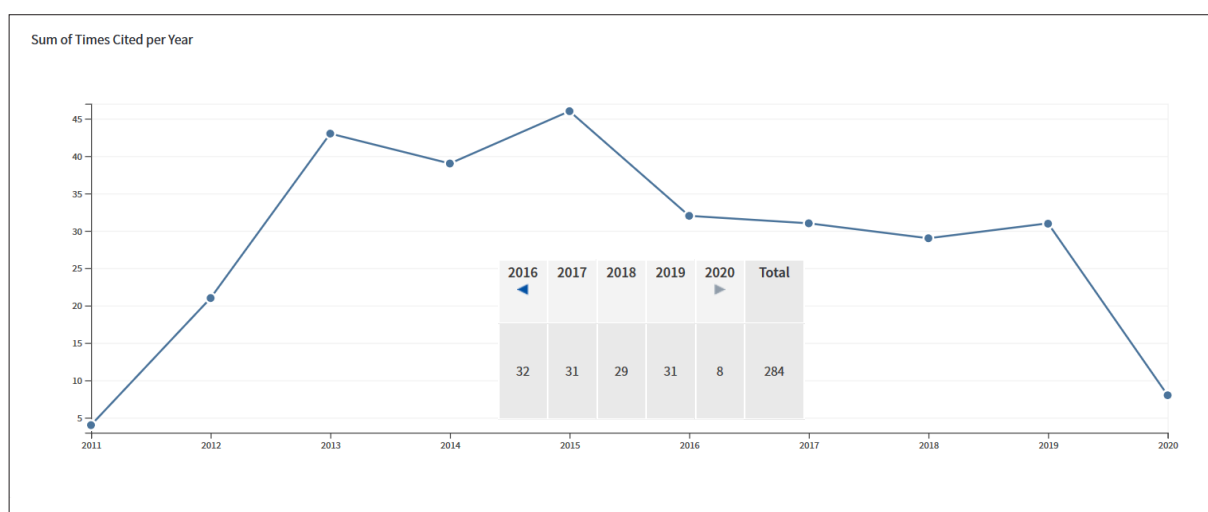
Boldea, I., Tutelea, L.N., Parsa, L., Dorrell, D. Automotive Electric Propulsion Systems With Reduced or No Permanent Magnets: An Overview, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, Volume: 61, Issue: 10, Pages: 5696-5711, ISSN: 0278-0046, eISSN: 1557-9948, 2014;
Times Cited in Web of Science Core Collection: 299

Abstract: Hybrid and electric vehicle technology has seen rapid development in recent years. The motor and the generator are at the heart of the vehicle drive and energy system and often utilize expensive rare-earth permanent magnet (PM) material. This paper reviews and addresses the research work that has been carried out to reduce the amount of rare-earth material that is used while maintaining the high efficiency and performance that rare-earth PM machines offer. These new machines can use either less rare-earth PM material,

weaker ferrite magnets, or no magnets; and they need to meet the high performance that the more usual interior PM synchronous motor with sintered neodymium-iron-boron magnets provides. These machines can take the form of PM-assisted synchronous reluctance machines, induction machines, switched reluctance machines, wound rotor synchronous machines (claw pole or biaxially excited), double-saliency machines with ac or dc stator current control, or brushless dc multiple-phase reluctance machines.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Computer Science** based on a highly cited threshold for the field and publication year.



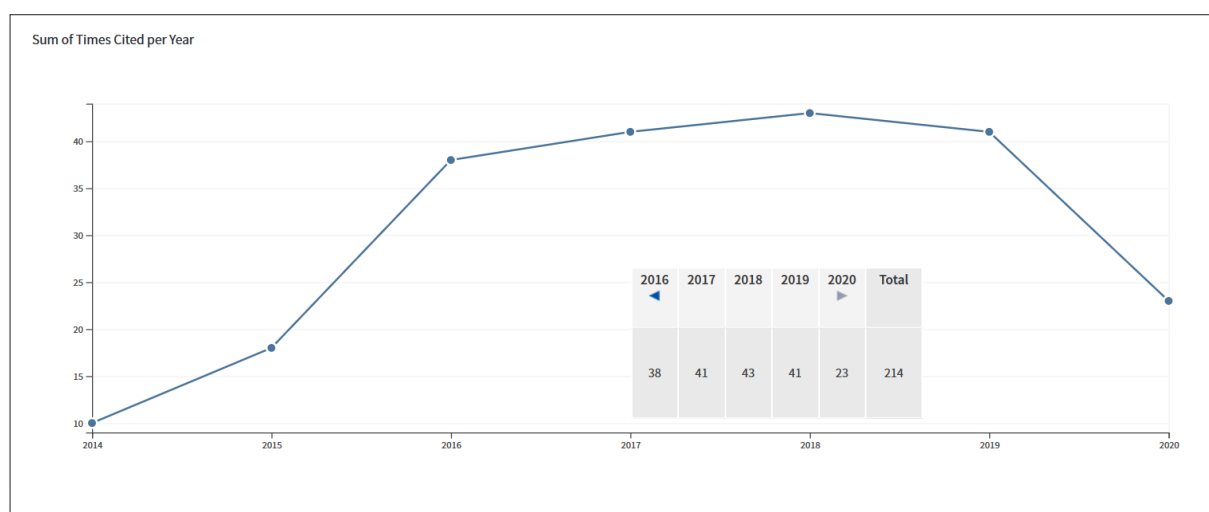
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Times Cited in Web of Science Core Collection: 284

Abstract: Fuzzy control has long been applied to industry with several important theoretical results and successful results. Originally introduced as model-free control design approach, model-based fuzzy control has gained widespread significance in the past decade.

This paper presents a survey on recent developments of analysis and design of fuzzy control systems focused on industrial applications reported after 2000.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



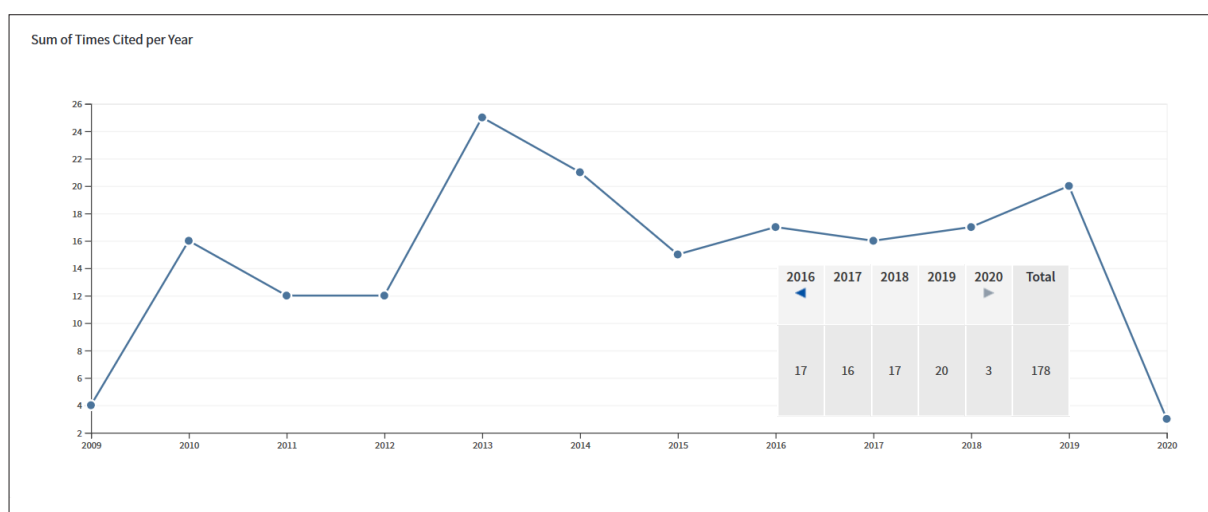
Sarbu, I., Sebarchievici, C. General review of ground-source heat pump systems for heating and cooling of buildings, *ENERGY AND BUILDINGS*, Volume: 70, Pages: 441-454, ISSN: 0378-7788, eISSN: 1872-6178, 2014;
Times Cited in Web of Science Core Collection: 214

Abstract: A large number of ground-source heat pumps (GSHP) systems have been used in residential and commercial buildings throughout the world due to the attractive advantages of high energy and environmental performances. The GSHPs are proven renewable energy technology for space heating and cooling. This paper provides a detailed literature review of the GSHP systems, and their recent advances. The operation principle and energy efficiency of a heat pump are defined first. Then, a general introduction on the GSHPs and its development, and a detailed description of the surface water (SWHP), ground-water (GWHP), and ground-couplet (GCHP) heat pumps are performed. The most typical simulation and ground thermal response

test models for the vertical ground heat exchangers currently available are summarized including the heat transfer processes outside and inside the boreholes. Also, some information about a new GWHP using a heat exchanger with special construction, and the possibility to obtain the better energy efficiency with combined heating and cooling by GCHP are presented. The various hybrid GCHP systems for cooling or heating-dominated buildings are well described. Finally, the energy, economic and environmental performance of a closed-loop GCHP system is also briefly reviewed. It is found that the GSHP technology can be used both in cold and hot weather areas and the energy saving potential is significant.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Mathematics** based on a highly cited threshold for the field and publication year.



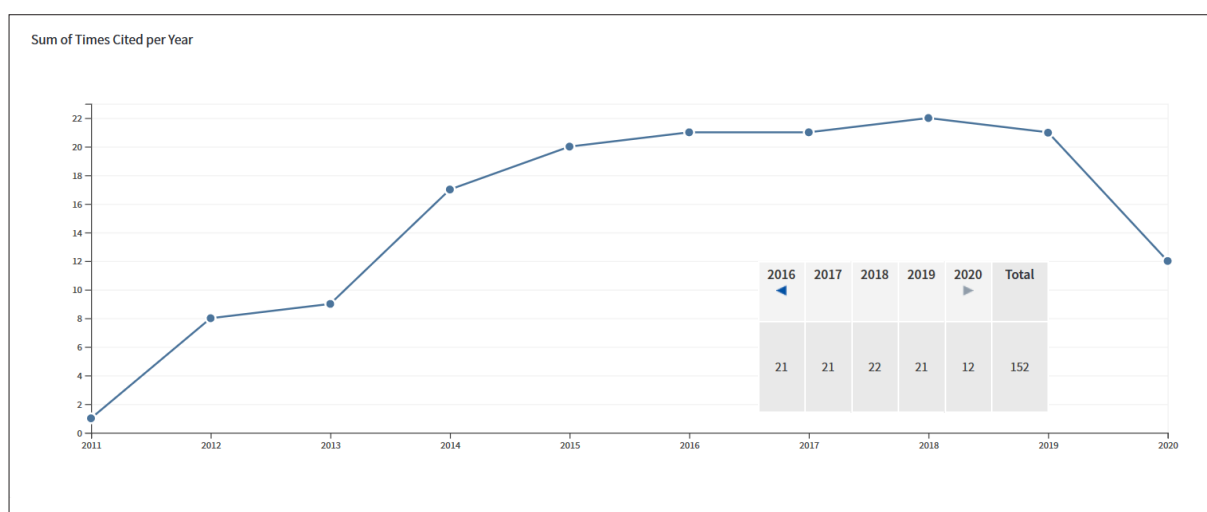
Marinca, V., Herisanu, N., Bota, C., Marinca, B. An optimal homotopy asymptotic method applied to the steady flow of a fourth-grade fluid past a porous plate, *APPLIED MATHEMATICS LETTERS*, Volume: 22, Issue: 2, Pages: 245-251, ISSN: 0893-9659, 2009;
Times Cited in Web of Science Core Collection: 178

Abstract: A new analytic approximate technique for addressing nonlinear problems, namely the Optimal Homotopy Asymptotic Method (OHAM), is proposed and used in an application to the steady flow of a fourth-grade fluid. This approach does not depend upon any small/large parameters. This method provides us with a convenient

way to control the convergence of approximation series and adjust convergence regions when necessary. The series solution is developed and the recurrence relations are given explicitly. The results reveal that the proposed method is effective and easy to use.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



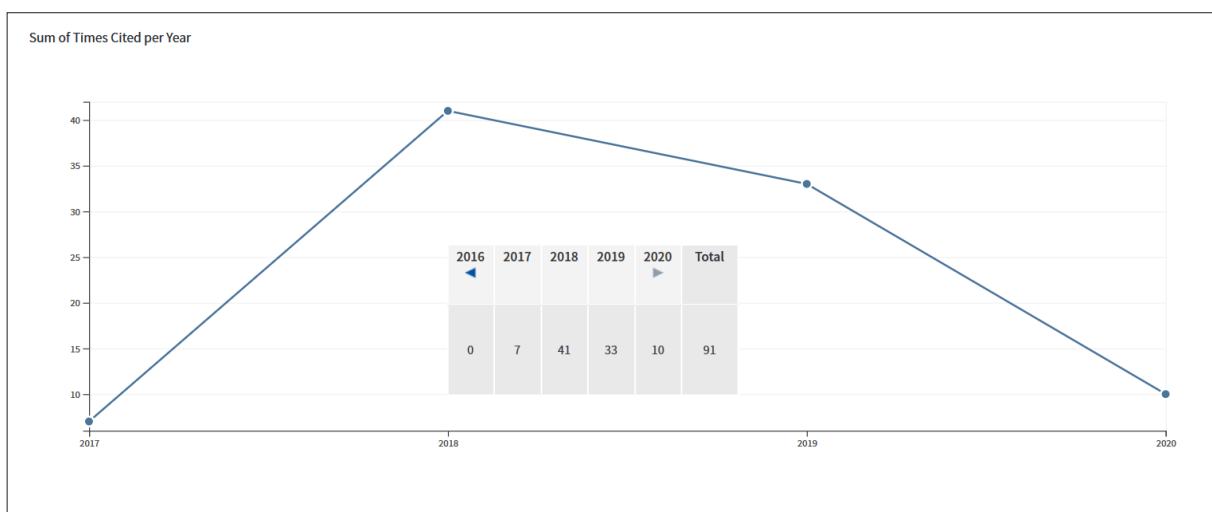
Gheju, M., Balcu, I. Removal of chromium from Cr(VI) polluted wastewaters by reduction with scrap iron and subsequent precipitation of resulted cations, *JOURNAL OF HAZARDOUS MATERIALS*, Volume: 196, Pages: 131-138, PubMed ID: 21955659, ISSN: 0304-3894, 2011;
Times Cited in Web of Science Core Collection: 152

Abstract: This work presents investigations on the total removal of chromium from Cr(VI) aqueous solutions by reduction with scrap iron and subsequent precipitation of the resulted cations with NaOH. The process was detrimentally affected by a compactly passivation film occurred at scrap iron surface, mainly composed of Cr(III) and Fe(III). Maximum removal efficiency of the Cr(total) and Fe(total) achieved in the clarifier under circumneutral and alkaline (pH 9.1) conditions was 98.5% and 100%, respectively. The optimum precipitation pH range which resulted from this study is 7.6-8.0. Fe(total) and Cr(total) were

almost entirely removed in the clarifier as Fe(III) and Cr(III) species: however, after Cr(VI) breakthrough in column effluent, chromium was partially removed in the clarifier also as Cr(VI), by coprecipitation with cationic species. As long the column effluent was free of Cr(VI), the average Cr(total) removal efficiency of the packed column and clarifier was 10.8% and 78.8%, respectively. Our results clearly indicated that Cr(VI) contaminated wastewater can be successfully treated by combining reduction with scrap iron and chemical precipitation with NaOH.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



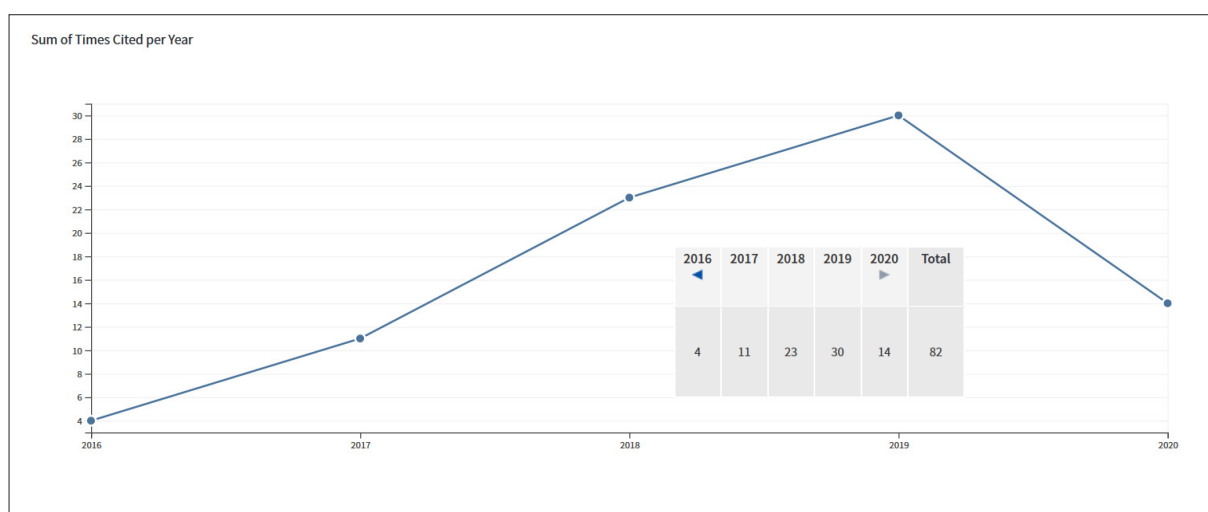
Precup, R.E., David, R.C., Petriu, E.M. Grey Wolf Optimizer Algorithm-Based Tuning of Fuzzy Control Systems With Reduced Parametric Sensitivity, IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS, Volume: 64, Issue: 1, Pages: 527-534, ISSN: 0278-0046, eISSN: 1557-9948, 2017; Times Cited in Web of Science Core Collection: 91

Abstract: This paper proposes an innovative tuning approach for fuzzy control systems (CSs) with a reduced parametric sensitivity using the Grey Wolf Optimizer (GWO) algorithm. The CSs consist of servo system processes controlled by Takagi-Sugeno-Kang proportional-integral fuzzy controllers (TSK PI-FCs). The process models have second-order dynamics with an integral component, variable parameters, a saturation, and dead-zone static nonlinearity. The sensitivity analysis employs output sensitivity functions of the sensitivity models defined

with respect to the parametric variations of the processes. The GWO algorithm is used in solving the optimization problems, where the objective functions include the output sensitivity functions. GWO's motivation is based on its low-computational cost. The tuning approach is validated in an experimental case study of a position control for a laboratory nonlinear servo system, and TSK PI-FCs with a reduced process small time constant sensitivity are offered.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



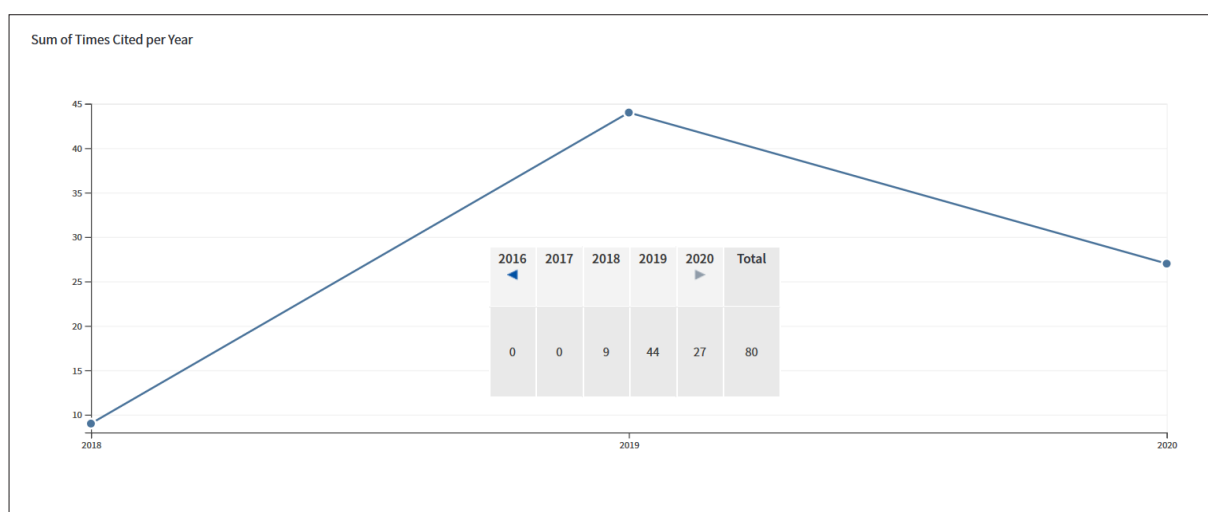
Gheju, M., Balcu, I., Mosoarca, G. Removal of Cr(VI) from aqueous solutions by adsorption on MnO₂, JOURNAL OF HAZARDOUS MATERIALS, Volume: 310, Pages: 270-277, PubMed ID: 26947189, ISSN: 0304-3894, eISSN: 1873-3336, 2016;
Times Cited in Web of Science Core Collection: 82

Abstract: Adsorption of Cr(VI) on MnO₂ was investigated with respect to effect of pH, temperature, ionic strength, initial Cr(VI) concentration, co-presence of different anions (HCO₃⁻, SO₄²⁻, H₂PO₄⁻, NO₃⁻ and Cl⁻) and of low molecular weight natural organic materials (LMWNOM) (acetate, oxalate and citrate). The process was rapid during the first 3-5 min, reaching equilibrium after one hour. Adsorption decreased with increasing pH, temperature and Cr(VI) initial concentration, and increased with increasing ionic strength. Co-presence of phosphate, sulfate, bicarbonate, citrate and oxalate hindered Cr(VI) adsorption, whereas nitrate, chloride and acetate did not exert any notable influence. The overall order of Cr(VI) adsorption suppression due to

co-presence of anions and LMWNOM was H₂PO₄⁻ > HCO₃⁻ > SO₄²⁻, and oxalate > citrate, respectively. Highest experimental equilibrium sorption capacity (0.83 mg g⁻¹) was obtained at 20 degrees C and pH 5.9, while lowest (0.18 mg g⁻¹) was noticed in the co-presence of H₂PO₄⁻, at 20 degrees C and pH 6.9. Adsorption kinetics was successfully fitted by pseudo-second-order model. Mechanisms for both specific and non-specific adsorption are likely to be involved, while rate-controlling step involved both intra-particle and film diffusion processes. Cr(VI) was strongly bound to MnO₂, which makes risks of its subsequent liberation into the environment to be low.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Environment/Ecology** based on a highly cited threshold for the field and publication year.



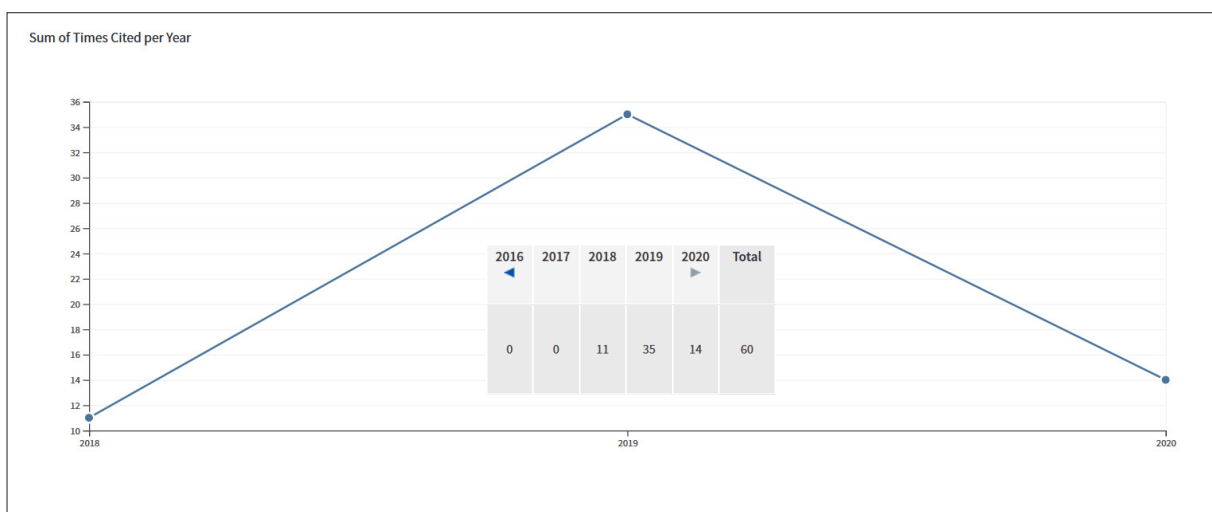
Sarbu, I., Sebarchievici, C. A Comprehensive Review of Thermal Energy Storage, SUSTAINABILITY, Volume: 10, Issue: 1, Article Number: 191, ISSN: 2071-1050, 2018;
Times Cited in Web of Science Core Collection: 80

Abstract: Thermal energy storage (TES) is a technology that stocks thermal energy by heating or cooling a storage medium so that the stored energy can be used at a later time for heating and cooling applications and power generation. TES systems are used particularly in buildings and in industrial processes. This paper is focused on TES technologies that provide a way of valorizing solar heat and reducing the energy demand of buildings. The principles of several energy storage methods and calculation of storage capacities are

described. Sensible heat storage technologies, including water tank, underground, and packed-bed storage methods, are briefly reviewed. Additionally, latent-heat storage systems associated with phase-change materials for use in solar heating/cooling of buildings, solar water heating, heat-pump systems, and concentrating solar power plants as well as thermo-chemical storage are discussed. Finally, cool thermal energy storage is also briefly reviewed and outstanding information on the performance and costs of TES systems are included.

Web of Science - Clarivate Analytics Highly Cited Paper

As of September/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



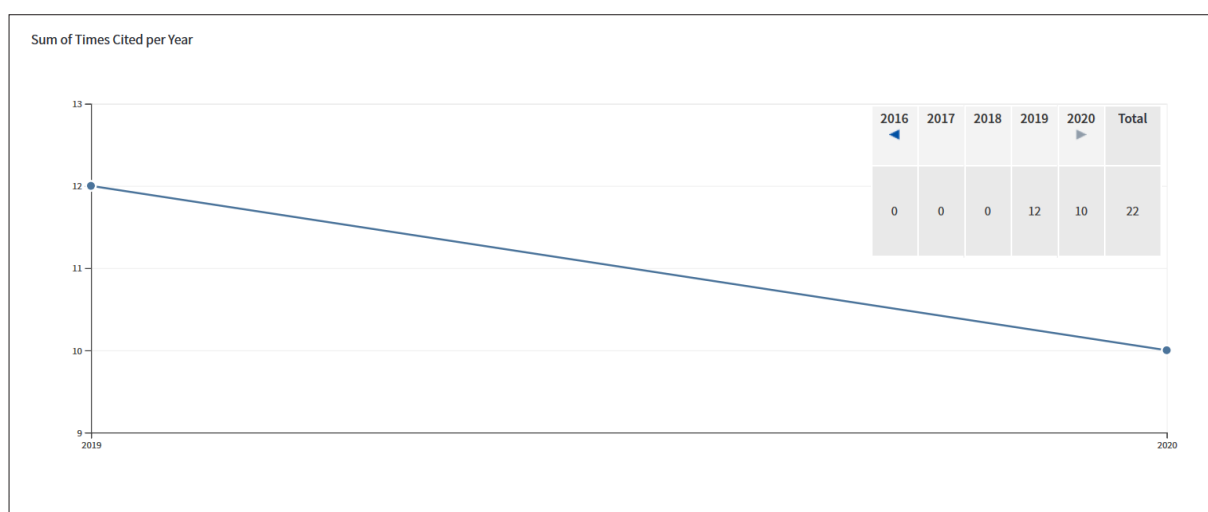
Ancuti, C.O., Ancuti, C., De Vleeschouwer, C., Bekaert, P. Color Balance and Fusion for Underwater Image Enhancement, IEEE TRANSACTIONS ON IMAGE PROCESSING, Volume: 27, Issue: 1, Pages: 379-393, PubMed ID: 28981416, ISSN: 1057-7149, eISSN: 1941-0042, 2018; Times Cited in Web of Science Core Collection: 60

Abstract: We introduce an effective technique to enhance the images captured underwater and degraded due to the medium scattering and absorption. Our method is a single image approach that does not require specialized hardware or knowledge about the underwater conditions or scene structure. It builds on the blending of two images that are directly derived from a color-compensated and white-balanced version of the original degraded image. The two images to fusion, as well as their associated weight maps, are defined to promote the transfer of edges and color contrast to the output

image. To avoid that the sharp weight map transitions create artifacts in the low frequency components of the reconstructed image, we also adapt a multiscale fusion strategy. Our extensive qualitative and quantitative evaluation reveals that our enhanced images and videos are characterized by better exposedness of the dark regions, improved global contrast, and edges sharpness. Our validation also proves that our algorithm is reasonably independent of the camera settings, and improves the accuracy of several image processing applications, such as image segmentation and keypoint matching.

Web of Science - Clarivate Analytics Highly Cited Paper

As of July/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Engineering** based on a highly cited threshold for the field and publication year.



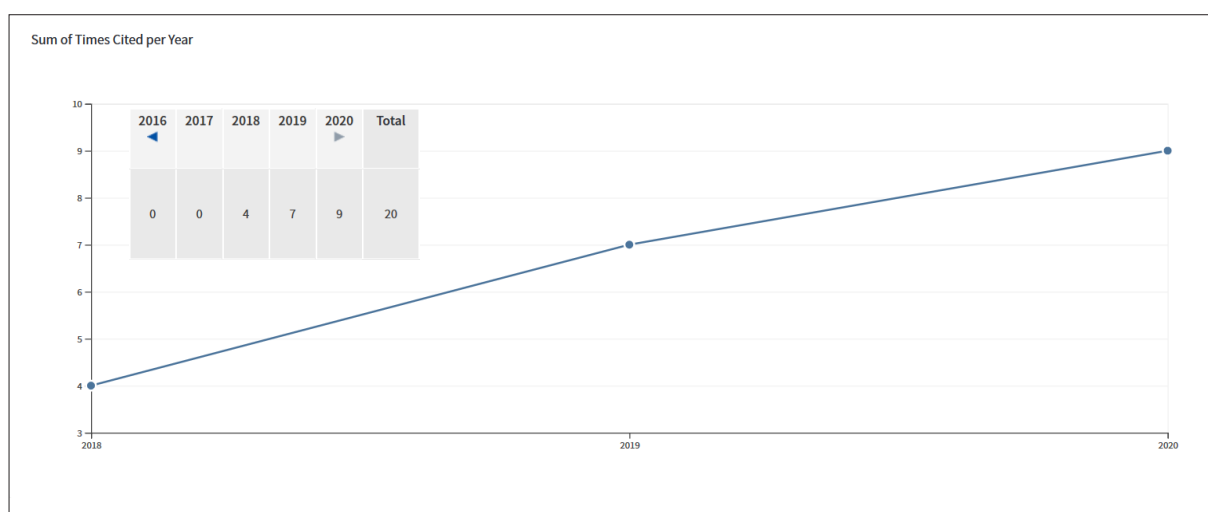
Sarbu, I., Dorca, A. Review on heat transfer analysis in thermal energy storage using latent heat storage systems and phase change materials, *INTERNATIONAL JOURNAL OF ENERGY RESEARCH*, Volume: 43, Issue: 1, Pages: 29-64, ISSN: 0363-907X, eISSN: 1099-114X, 2019;
Times Cited in Web of Science Core Collection: 22

Abstract: Thermal energy storage (TES) is a technology that stocks thermal energy by heating or cooling a storage medium so that the stored energy can be used later for heating and cooling applications and for power generation. TES has recently attracted increasing interest to thermal applications such as space and water heating, waste heat utilisation, cooling, and air conditioning. Phase change materials (PCMs) used for the storage of thermal energy as latent heat are special types of advanced materials that substantially contribute to the efficient use and conservation of waste heat and solar energy. This paper provides a comprehensive review on the development of latent heat storage (LHS) systems focused on heat transfer and enhancement techniques employed in PCMs to effectively charge and discharge

latent heat energy, and the formulation of the phase change problem. The main categories of PCMs are classified and briefly described, and heat transfer enhancement technologies, namely dispersion of low-density materials, use of porous materials, metal matrices and encapsulation, incorporation of extended surfaces and fins, utilisation of heat pipes, cascaded storage, and direct heat transfer techniques, are also discussed in detail. Additionally, a two-dimensional heat transfer simulation model of an LHS system is developed using the control volume technique to solve the phase change problem. Furthermore, a three-dimensional numerical simulation model of an LHS is built to investigate the quasi-steady state and transient heat transfer in PCMs. Finally, several future research directions are provided.

Web of Science - Clarivate Analytics Highly Cited Paper

As of March/October 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Materials Science** based on a highly cited threshold for the field and publication year.



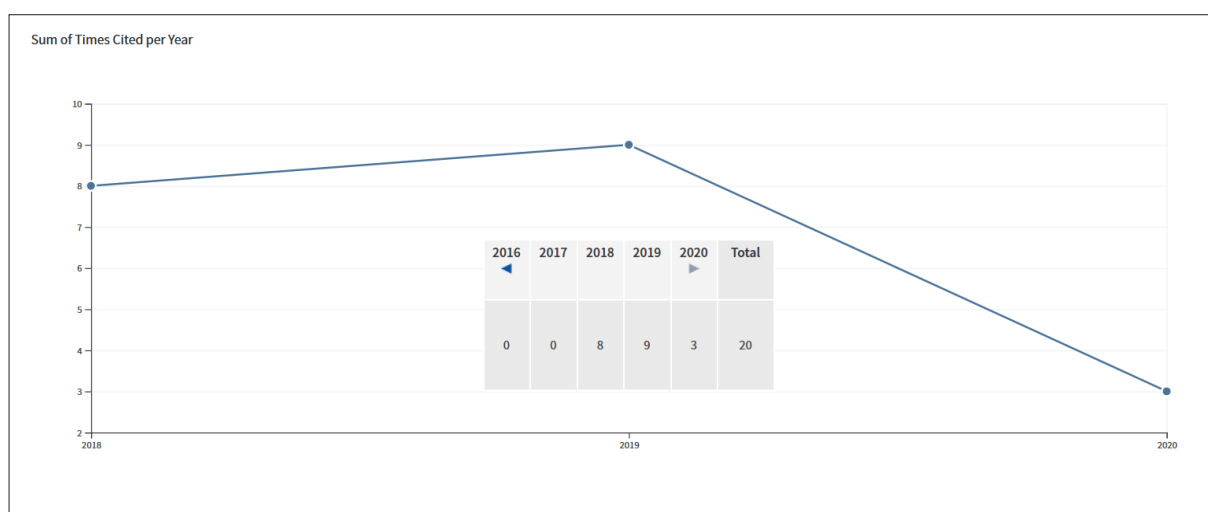
Linul, E., Marsavina, L., Linul, P.A., Kovacic, J. Cryogenic and high temperature compressive properties of Metal Foam Matrix Composites, COMPOSITE STRUCTURES, Volume: 209, Pages: 490-498, ISSN: 0263-8223, eISSN: 1879-1085, 2019;
Times Cited in Web of Science Core Collection: 20

Abstract: The cryogenic (- 196 degrees C), room (25 degrees C) and high (250 degrees C) temperature compressive crushing performances of recently developed metal foam matrix composites was investigated with respect to the position of reinforcements on foam samples. Closed-cell aluminum alloy foams were produced via powder metallurgical route from A1Si10 matrix material; while diamond shape expanded stainless steel were used as reinforcements. The deformation behavior and main mechanical properties of the unreinforced and reinforced metallic foam was found to be strongly

temperature dependent under quasi-static loading. Reinforced foams exhibited much higher strength properties and energy absorption capability compared to unreinforced foams at almost the same overall weight of the samples, i.e. up to 11 times. The properties percentage reductions of the reinforced foams are significantly below the reduction of the unreinforced foam. Furthermore, it was observed that the collapse mechanisms and mechanical properties of the reinforced foams depends on reinforcement position.

Web of Science - Clarivate Analytics Highly Cited Paper

As of November/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Chemistry** based on a highly cited threshold for the field and publication year.



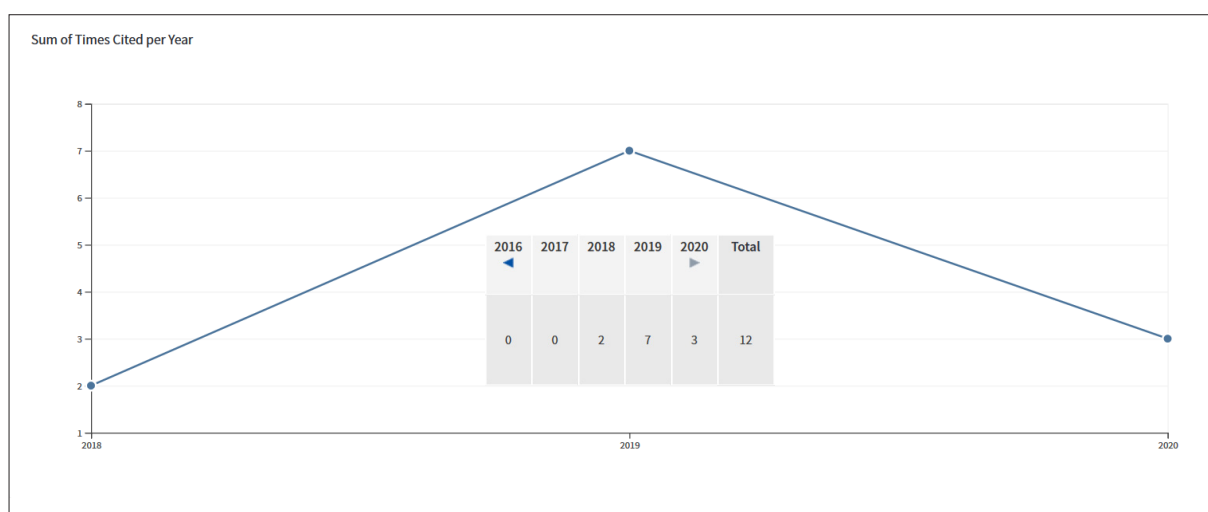
Istratie, R., Stoia, M., Pacurariu, C., Locovei, C. Single and simultaneous adsorption of methyl orange and phenol onto magnetic iron oxide/carbon nanocomposites, ARABIAN JOURNAL OF CHEMISTRY, Volume: 12, Issue: 8, Pages: 3704–3722, ISSN: 1878-5352, eISSN: 1878-5379, 2019; Times Cited in Web of Science Core Collection: 20

Abstract: Magnetic iron oxide/carbon nanocomposites were synthesized by a facile, one-step solvothermal method. The magnetic nanopowders were characterized by X-ray diffraction (XRD), Fourier transform infrared (FTIR) spectroscopy, thermal analysis (DSC-TG), scanning electron microscopy (SEM), specific surface area and particle size measurements, pore size distributions and magnetic properties. The magnetic nanopowders were tested as adsorbents for the removal of methyl orange (MO) and phenol (Ph) from aqueous solutions. The effects of solution pH, contact time, adsorbent dose and initial pollutants concentration on the adsorption of MO and phenol onto the investigated adsorbents were studied. A significant increase in the removal efficiency, both for MO and phenol, with the increase in the carbon content of the magnetic nanopowder was evidenced.

New experimental data were provided regarding the bicomponent adsorption of MO and phenol. Pseudo-second order equation was fitted to the kinetic data and four isotherm models, namely Langmuir, Freundlich, Redlich-Peterson and Sips were used to analyze the equilibrium data in both single and binary-component solutions. The investigated adsorbents showed a higher adsorption capacity toward MO than phenol. The simultaneous adsorption of the two pollutants in bicomponent solutions indicated that the MO adsorption is practically not affected by the presence of phenol while the adsorption of phenol is significantly reduced in the presence of MO. The benefits of obtaining low-cost nanocomposites with adsorption capacity and magnetic separation tailored, effective in single and bicomponent adsorption of MO and phenol, represent strong arguments regarding their great potential for practical applications.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/June and November/December 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Environment/Ecology** based on a highly cited threshold for the field and publication year.



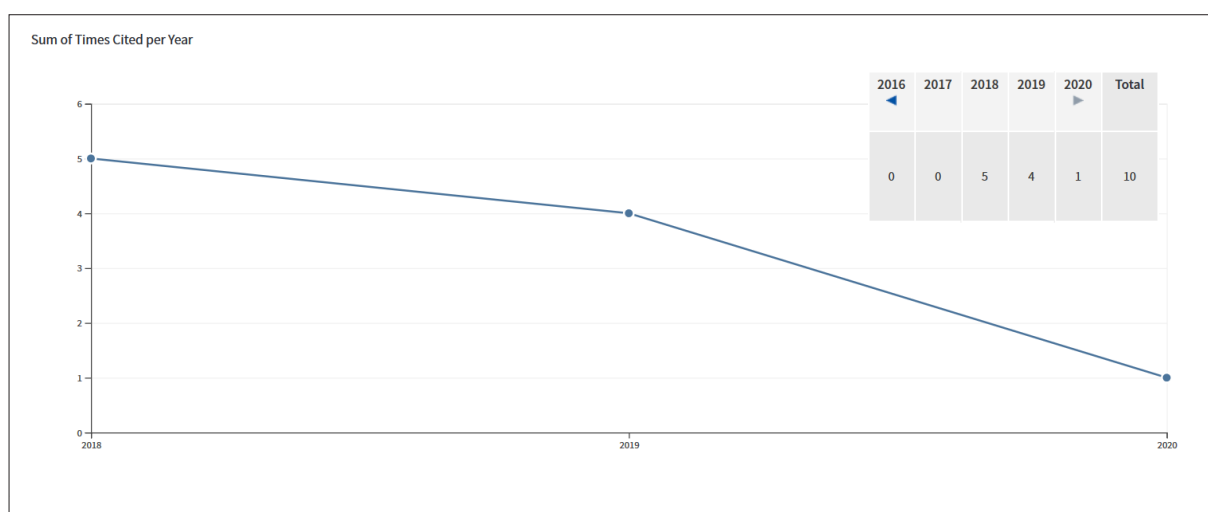
Gheju, M., Balcu, I. Sustaining the efficiency of the Fe(0)/H₂O system for Cr(VI) removal by MnO₂ amendment, CHEMOSPHERE, Volume: 214, Pages: 389-398, PubMed ID: 30268895, ISSN: 0045-6535, eISSN: 1879-1298, 2019;
Times Cited in Web of Science Core Collection: 12

Abstract: This study aims to provide new knowledge regarding the effect of MnO₂ co-presence on efficiency of Cr(VI) removal with Fe(0). Non-disturbed batch experiments (≤ 40 days) were conducted using two types of Fe(0) (milli- and micro-sized), two Cr(VI) concentrations (5 and 100 mg/L), in three different systems ("Fe(0) only", "MnO₂ only", and "Fe(0) + MnO₂"), at an initial pH value of 6.9. Compared to "Fe(0) only" system, the efficiency and rate of Cr(VI) removal were highly promoted in "Fe(0) + MnO₂" system; moreover, while for the "Fe(0) only" system removal of Cr(VI) was severely hindered by increasing Cr(VI) concentration, in "Fe(0) + MnO₂" system comparable high efficacies were noticed both at low and

high concentration. Recycling experiments indicated that total Cr(VI) removal capacity of "Fe(0) + MnO₂" system was up to 48.1 times greater than of the "Fe(0) only" system. Enhanced removal of Cr(VI) with Fe(0) was achieved at low doses of MnO₂, with an optimal mass ratio Fe(0):MnO₂ of 4:1. The favorable synergistic effect observed in "Fe(0) + MnO₂" system was ascribed to capacity of MnO₂ to accelerate Fe(0) oxidative dissolution, and to generate supplementary amounts of secondary adsorbents/reductants with removal ability towards Cr(VI). This study provides compelling evidence that "Fe(0) + MnO₂" system could represent a highly efficient and cost-effective alternative for the abatement of Cr(VI) aqueous pollution.

Web of Science - Clarivate Analytics Highly Cited Paper

As of January/February 2019, this highly cited paper received enough citations to place it in the top 1% of the academic field of **Mathematics** based on a highly cited threshold for the field and publication year.



Duma, V.F., Schitea, A. LASER SCANNERS WITH ROTATIONAL RISLEY PRISMS: EXACT SCAN PATTERNS, PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE, Volume: 19, Issue: 1, Pages: 53-60, ISSN: 1454-9069, 2018;
Times Cited in Web of Science Core Collection: 10

Abstract: We approach the exact scan patterns produced by scanners with rotational Risley prisms. Previous methods have considered such studies mostly approximately, in the paraxial domain or using the third-order theory. Exact, but complicated analytical solutions have also been developed. In contrast, we propose a novel, easy-to-use, graphical method, in order to complete the exact modeling of the scanning process: with a mechanical design program, CATIA V5R20 (Dassault Systemes, Paris, France). By ray-tracing using the prisms

equations, the scan patterns are determined and studied with regard to the characteristic parameters of the device: prism angles and their rotational speeds, as well as the scanner geometry. Marshall's characteristic parameters are utilized: the ratios of the prism angles and of the rotational speeds. An experimental validation of the modeling procedure is completed. The exact modeling method proposed allows for choosing the most appropriate parameters of the device in order to obtain a certain scan pattern for a specific application.

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* The data was obtained from Web of Science - Clarivate Analytics in 22 June 2020

