



Revista Boliviana de Química

Rev. Bol. Quim. ISSN 0250-5460
Rev. boliv. quim. ISSN 2078-3949

Bolivian Journal of Chemistry
Vol. 39, No. 1, 2022

Abstracts

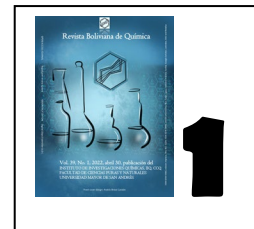
OPEN ACCESS JOURNAL
Rapid peer review system
BIMONTHLY EDITION
Digital Object Identifier D.O.I.

Revista Boliviana de Química

Vol. 39, No. 1, 2022, abril 30, publicación del
INSTITUTO DE INVESTIGACIONES QUÍMICAS, IIQ, CCQ
FACULTAD DE CIENCIAS PURAS Y NATURALES
UNIVERSIDAD MAYOR DE SAN ANDRÉS

ISSN 0250-5460, edición impresa; Rev. Bol. Quim. ISSN 2078-3949, edición electrónica; Rev. boliv. quim., indexed in Scielo, Scirbd, Google Scholar, Latindex, OAJ and Reialyc

Front-cover design: Andrés Bravo Canedo



REVISTA BOLIVIANA DE QUÍMICA

ISSN 0250-5460 Rev. Bol. Quím. Paper edition
ISSN 2078-3949 Rev. boliv. quim. Electronic edition
Sleyther A. De La Cruz Vega et al. RBQ Vol.39, No.1, pp. 1-9, 2022

Received 12 23 2021 39(1); Jan./Apr. 2022
Accepted 04 15 2022
Published 04 30 2022; DOI:10.34098/2078-3949.39.1.1



RESISTENCIA A COMPRESIÓN SIMPLE DEL CONCRETO CON YESO Y RESIDUOS DE CONCHAS DE ABANICO

Received 12 23 2021
Accepted 04 10 2022
Published 04 30 2022

Vol. 39, No.1, pp. 1-9, Ene./Abr.2022
Revista Boliviana de Química

39(1), 1-9, Jan./Apr. 2022
Bolivian Journal of Chemistry
DOI: 10.34098/2078-3949.39.1.1



Full original article

Peer-reviewed

Sleyther A. De La Cruz Vega¹, Leo A. La Borda Dueñas Tovar¹, Cristian M. Mendoza Flores², José A. Garrido Oyola³

¹Departamento de Ingeniería, Escuela Profesional de Ingeniería Civil, Universidad Nacional de Barranca, +51931279378, +51949509284, Barranca, Perú, sdelacruz@unab.edu.pe

²Departamento Académico de Física, Universidad Nacional José Faustino Sánchez Carrión, +51951602254, Huacho, Perú, cmendozaf@unifsc.edu.pe

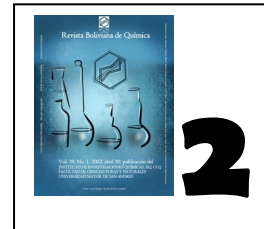
³Departamento de Ingeniería Industrial, Escuela Profesional de Ingeniería Industrial, Universidad Nacional José Faustino Sánchez Carrión, +51995318398, Huacho, Perú, jgarrido@unifsc.edu.pe

Keywords: Concrete, Strength, Fan shell, Residue

Palabras clave: Concreto, Resistencia, Conchas de abanico, Residuos

RESUMEN

Los residuos de conchas de abanico son desechados en rellenos sanitarios sin previo tratamiento, contaminando grandes áreas del desierto costero peruano. Este trabajo busca analizar la resistencia a la compresión simple del concreto elaborado con yeso y residuos de conchas de abanico. El proceso de tratamiento de los residuos se realiza mediante la conversión de carbonato de calcio en óxido de calcio por medio de un proceso de calcinación. Los resultados del análisis térmico diferencial de la presente investigación, demostraron que la temperatura adecuada de calcinación es 890°C. La composición del yeso fue de 64.11 % de calcio y 33.81% azufre. La composición de la concha de abanico calcinada fue de 99.43% de calcio y 0.49 % de estroncio. Los resultados mostraron que la resistencia a la compresión del concreto experimental es 222 kg/cm² frente a la resistencia patrón igual a 228 kg/cm².



REVISTA BOLIVIANA DE QUÍMICA
ISSN 0250-5460 Rev. Bol. Quím. Paper edition
ISSN 2078-3949 Rev. boliv. quim. Electronic edition
Witney Ramos H. et al. RBQ Vol.39, No.1, pp. 10-18, 2022

Received 08 10 2021 39(1); Jan./Apr. 2022
Accepted 04 20 2022
Published 04 30 2022; DOI:10.34098/2078-3949.39.1.2



EVALUACIÓN DE NANOFILTROS CON DIATOMITA PARA LA REMOCIÓN DE CADMIO EN MUESTRAS DE AGUA DEL RÍO TAMBO-AREQUIPA

Received 08 10 2021
Accepted 04 20 2022
Published 04 30 2022

Vol. 39, No.1, pp. 10-18, Ene./Abr. 2022
Revista Boliviana de Química

39(1), 10-18, Jan./Apr. 2022
Bolivian Journal of Chemistry
DOI: 10.34098/2078-3949.39.1.2



Full original article

Peer-reviewed

Witney Ramos H.¹, Pavel Delgado-Sarmiento^{2,3,*}, Lilia Miranda R.²

¹Chemistry Laboratory, Professional School of Environmental Engineering, Universidad Alas Peruanas, Urb. Daniel Alcides Carrion G-14, phone +5154431051, Arequipa, Peru, <http://www.uap.edu.pe>

²Thermodynamics Laboratory, Professional School of Chemical Engineering, Universidad Nacional de San Agustín de Arequipa UNSA, Av. Independencia s/n, phone +5154226447, Arequipa, Perú, iqumica@unsa.edu.pe, <http://fip.unsa.edu.pe/ingquimica/>

³Instituto del Gas y del Petróleo, Facultad de Ingenierías de la Universidad de Buenos Aires, UBA, Av. Las Heras 2214, phone +54 528 50343, Buenos Aires, Argentina, www.fi.uba.ar

Keywords: Nanofilters, Biosorption, Cadmium, Diatoms, Diatomite

Palabras clave: Nanofiltros, Biosorción, Cadmio, Diatomitas, Diatomita

ABSTRACT

Cadmium is a highly toxic heavy metal with a current price of 60 usd/kg, Peru being the 8th world producer with an annual yield of 771 metric tons in 2019. Its presence in natural waters and mining effluents as Cd (II) ions, is an environmental problem of increasing magnitude. The environmental quality standard (ECA) for water intended for human consumption in Peru, Supreme Decree No. 004-2017- MINAM, indicates 0.005 mg/L for cadmium. Diatom was used as Cd(II) adsorbent through a chemisorption process. The experimental tests were carried out in a batch system from water obtained during the monitoring that was done in the Tambo River. The independent variables that could be measured were the pH, the mass of the adsorbent and the contact time between the two phases. From the proposed experimental design, a maximum removal of Cadmium (II) of 99.3% was achieved in experiments 3, 4, 6, 7 and 8 under constant agitation of 1400 rpm. The mathematical model was obtained from the 2k factorial design of two levels and three factors, with three repetitions in the central point. In the present investigation, tests were carried out with a Scanning Electron Microscope (SEM) before and after adsorption. Thus, it was found that diatoms activated with 5% nitric acid have a high adsorption power against Cadmium (II) ions.



REVISTA BOLIVIANA DE QUÍMICA
ISSN 0250-5460 Rev. Bol. Quim. Paper edition
ISSN 2078-3949 Rev. boliv. quim. Electronic edition
Grover Castañeta et al. RBQ Vol.39, No.1, pp. 19-25, 2022

Received 04 19 2022 39(1); Jan./Apr. 2022
Accepted 04 28 2022
Published 04 30 2022; DOI:10.34098/2078-3949.39.1.3



**CHARACTERIZATION OF
TERPENOIDS FROM
PSEUDOGNAPHALIUM
GAUDICHAUDIANUM (DC) ANDERB,
WIRA-WIRA BY GC/MS, ACTIVE
PRINCIPLES WITH POSSIBLE USE IN
COVID-19 INFECTION PREVENTION**

Received 04 19 2022
Accepted 04 28 2022
Published 04 30 2022

Vol. 39, No.1, pp. 19-25, Ene./Abr. 2022
Revista Boliviana de Química

39(1), 19-25, Jan./Apr. 2022
Bolivian Journal of Chemistry
DOI: 10.34098/2078-3949.39.1.3



Short report

Peer-reviewed

Grover Castañeta*, Aleyda Huayhua-Llusco, Santiago Tarqui, Abel F. Gutiérrez

Instituto de Investigaciones Químicas IIQ, Facultad de Ciencias Puras y Naturales FCPN, Universidad Mayor de San Andrés UMSA, P.O. Box 303, Calle Andrés Bello s/n, Ciudad Universitaria Cota-Cota, La Paz, Bolivia, gcastaneta1@gmail.com, aleydahuayhua.419@gmail.com, starquit@fcpn.edu.bo, gabelfranz.afge@gmail.com, www.umsa.bo

Keywords: *a-Pinene, Asteraceae, Covid-19, Essential oil, Terpenoids, Wira-wira*

Palabras clave: *a-Pineno, Asteraceae, Covid-19, Aceite esencial, Terpenoides, Wira-wira*

ABSTRACT

Pseudognaphalium gaudichaudianum (DC.) Anderb., (Asteraceae) is a small herbaceous plant that grows in the heights and in mountainous places. Known by the vernacular name "Wira Wira", it is well reputed in traditional medicine by aymara communities to treat respiratory diseases like cough, common cold, bronchitis, and pneumonia in the highlands of Bolivia. Due of its expectorant properties, *P. gaudichaudianum* has been proposed as a phytodrug to prevent infection by COVID-19, in infusions and vaporization. In this study, the terpenoids from its essential oil were characterized by Gas Chromatography Coupled to Mass Spectrometry (GC/MS). The analysis showed the presence of 1 monoterpenoid, 11 sesquiterpenoids, 2 diterpenoids and 4 minor unidentified compounds. The major compounds identified were β -Eudesmene (16.35%), Rosifoliol (15.29%), Guaia 1(10), 11-diene (15.20%), Guaia 6,9 diene (14.46%), α -Pinene (11.32%) and α -Guaiene (6,16%).

*Correspondent autor: governeoaxel@gmail.com