Dedicated to the 70th Anniversary of

Academician, Professor Gheorghe DUCA

The 7th International Conference

ECOLOGICAL AND ENVIRONMENTAL CHEMISTRY-2022

March 3-4, 2022, *Chisinau, Republic of* ***Moldova***

ABSTRACT BOOK

Volume 1

Chisinau-2022

CZU 574(082)
E 15

Abstract Book, Volume 1: The 7th International Conference: "Ecological and Environmental Chemistry", March 3-4, 2022, Chisinau, Republic of Moldova (EEC-2022, http://eec-2022.mrda.md/).

Dedicated to the 70th Anniversary of Academician, Professor Gheorghe DUCA.

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The Authors of Abstracts submitted to the EEC-2022 Conference take full responsibility for their content/originality and for English language!

The Abstract Book covers the short resumes of the latest research results presented by local and international scientific community to the 7th International Conference: "Ecological and Environmental Chemistry", which is continuation of a series of successful conferences organized in 1995, 2002, 2005, 2008, 2012 and 2017, being supported by UNESCO, MFGS, CRDF/MRDA, ONRG, as well as Moldovan R&D organizations: Institute of Chemistry, Chemical Society of the Republic of Moldova, Department of Ecological and Industrial Chemistry of Moldova State University, Moldovan Research and Development Association, etc.

The EEC-2022 Conference is organized within the Moldova's State Program (2020-2022), Research Project "RedoxPro", Nr. 20.80009.5007.27, "Physico-chemical mechanisms of redox reactions with electron transfer involved in the vital, technological and environmental systems".

"Ecological and Environmental Chemistry-2022", international conference (7 ; 2022 ; Chişinău). The 7th International Conference "Ecological and Environmental Chemistry-2022" : dedicated to the 70th Anniversary of Academician, Professor Gheorghe Duca, March 3-4, 2022, Chisinau : Abstract Book / international scientific committee, national organizing committee: Duca Gheorghe (president) [et al.]. – Chişinău : CEP USM, 2022 – . – ISBN 978-9975-159-06-7.
Vol. 1. – 2022. – 230 p. : fig., tab. – Antetit.: Moldova State Univ. – Referinţe biblogr. la sfârşitul art. – Index de nume : p. 214-229. – 100 ex. – ISBN 978-9975-159-07-4.
574(082)
E 15

DOI: http://dx.doi.org/10.19261/eec.2022.v1

ON THE TECHNICAL POSSIBILITY OF PHOTOSYNTHESIS INTENSIFICATION TO FIGHT THE "CARBON PRINT"

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Water is not just a liquid, water is life, one of the main riches of the Earth. Its resources are inexhaustible, it is an inexhaustible source of energy, it contains not only the world's reserves of deuterium – the fuel of future thermonuclear energy, but also colossal amounts of chemically bound hydrogen – an alternative to hydrocarbon and "green" energy. The well-known statement of the Nobel laureate L. Montagnier that water determines not only the health, but also the well-being of the world's population is confirmed.

A method is proposed for controlling not only the physicochemical properties of water (saturated vapor pressure, surface tension, osmotic pressure, etc.), but also successfully changed its chemical characteristics (pH and redox potential (ORP)).

Given the technical simplicity of such a modification – processing with alternating electric potential, its successful application in agriculture is possible — an increase of more than 20 percent in crop yields while reducing irrigation water consumption. To explain such impressive practical results, the experimentally established fact of intensification of the photosynthesis process was confirmed (due to increased assimilation of atmospheric carbon dioxide by plants due to a decrease in the value of ORP in electrophysically modified water and an increase in pH to 7.4).

Thus, the so-called "carbon" agriculture becomes possible and rational, aimed not only at ensuring food satisfaction of the population, but also at minimizing the so-called "carbon print" of man-made activities.

The next step, taking into account the fact of increasing osmotic pressure in electro-physically modified water, becomes likely the success of the fight against viral infections.

The unique physicochemical properties of electrophysical modified water (an increase in the pH of blood plasma and intercellular fluid) lead to an increase in the amount of hemoglobin-bound oxygen, and changes in osmotic pressure and viscosity minimize thrombosis and initiate "osmotic shock" (ruptures of cell membranes).

Acknowledgement: This work was carried out with the financial support of the Russian Science Foundation Grant No. 21 – 79 – 30029.

SYNTHETIC ZEOLITES MODIFIED WITH SALTS TRANSITION METALS IN THE REACTION OF CHEMISORPTION-CATALYTIC OXIDATION OF SULFUR DIOXIDE BY AIR OXYGEN

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Sulfur dioxide is known as the most widespread environmental pollutant. Various chemisorbents and catalysts are commonly used to reduce its concentration in the air. The most effective chemisorbents are natural and synthetic zeolites, activated carbons, carbon fiber materials, metal oxide. The analysis of low-temperature methods for air purification from SO_2 in the concentration not exceeded 15 MPC (150 mg/m^3) showed that the application of chemisorption-catalytic processes with the participation of transition metal salts deposited on various carriers is promising. In the work, commercial synthetic zeolites of NaA and KA brands were used as carriers of transition metal salts. Chemisorption-catalytic compositions $MX_2/\overline{S}$ ($\overline{S}$ = NaA, KA; M^{2+} = Cu, Mn, Co, Ni; X = Cl^-, NO_3^-) for the oxidation of sulfur dioxide with air oxygen at ambient temperature and high humidity were obtained. The initial carriers and chemisorption-catalytic compositions were studied by XRD, SEM, FT-IR spectroscopy, TG, DTG-DTA. Zeolites NaA and KA have the same parameters of the crystal structure, which do not change when modified with transition metal salts. Under their influence, a slight decrease in the relative crystallinity was observed. The study has shown that NaA and KA samples differ in

Bun de tipar 04.02.2022. Formatul 60x84 1/8

Tirajul 100 ex.

Centrul Editorial-Poligrafic al USM

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