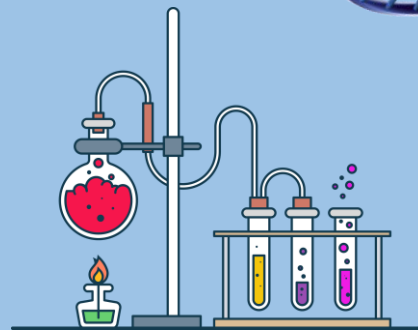
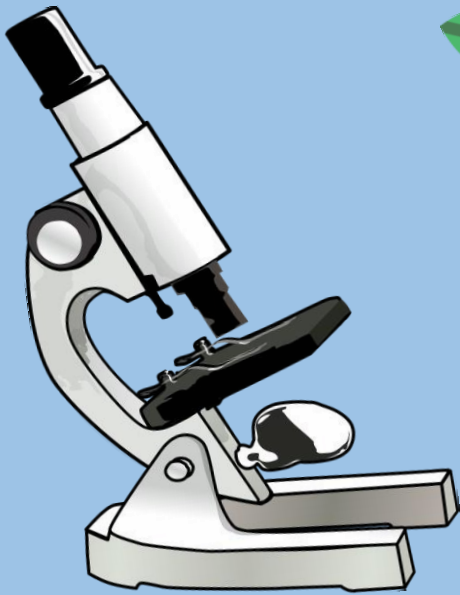


III INTERNATIONAL SIIRT CONFERENCE ON SCIENTIFIC RESEARCHES

'18-19 November 2022'

CONFERENCE PROCEEDING BOOK



EDITORS:

Prof. Dr. Cahit PESEN
Assoc. Prof. Dr. Seyithan SEYDOSOGLU
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18.11.2022 | SESSION-3 | HALL-2

Ankara Local Time: 15:00-17:00

Meeting ID: 864 8881 6529 / Zoom Passcode: 003300

HEAD OF SESSION: Dr. Hasan YENICIRAK

Authors	Affiliation	Presentation title
Aayad Ammar Sayhood Mohanad Hazim Halboos	University of Kufa	The Treatment of Environmental Pollution Caused by Mercury Ions by Adsorption Method Using Agricultural Residues of Vigna Peel
Shivani Yadav D.K Chauhan	Chaudhary Charan Singh University	Oral administration of Copper oxide nanoparticles (CuO NPs) to mature female albino rats leads kidney damage
Asma Tahir Fakhar Ud Din Kanwal Shabbir Mohsin Fawad Faisal Ghani	Quaid-i-Azam University	Development of Carbamazepine Loaded Nanostructured Lipid Carriers for Brain Delivery to Enhance In-Vivo Anticonvulsant & Anxiolytic Activity
Svetlana Yuriyevna Zavalishina	Russian State Social University	Functional Properties Of Platelets In Vegetable Calves
G.V.R Reddy K.Sandhya Rani	Koneru Lakshmaiah Education Foundation	Significance Of Cattaneo-Christov Heat Flux On Chemically Reacting Nanofluids Flow Past A Stretching Sheet With Joule Heating Effect
Ruhi Tomar Dushyant Kumar Chauhan	C.C.S University	Histopathological Modulations in the Liver of Hyperglycemic Rats Treated with Green Synthesised Zinc Oxide Nanoparticles
Javier Fombona Jorge Puente Susana Sánchez	University of Oviedo	Primary Schools, And Transparent Organizations, Open To Society: Orgtransparente.Uniovi.Es/En
Najwa Jbira Anass LEBNAITI Sanaa HAYANI MOUNIR	Sultan Moulay Slimane University of Beni Mellal	Application of Exergy Analysis in a Moroccan dairy process
Beatriz de Barros Souza	University of Malaga	Conflict and solidarity in refugee camps: MHPSS theory and practice
Elena Sierikova Elena Strelnikova Ivan Vierushkin	National University of Civil Defence of Ukraine	Taking into account the soil influence as the elastic Winkler foundation during the cylindrical tank oscillations under seismic loads

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

**TAKING INTO ACCOUNT THE SOIL INFLUENCE AS THE ELASTIC WINKLER
FOUNDATION DURING THE CYLINDRICAL TANK OSCILLATIONS UNDER
SEISMIC LOADS**

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ABSTRACT

Petroleum products storage tanks, which are widely used in the urban economy and industry, are ecologically dangerous sources of technogenic influence on the environment, acting as objects of uncontrolled emissions of vapor-air or vapor-gas-air mixtures and spills of petroleum products with subsequent fires and explosions. Properly designed oil storage facilities could prevent leakage and potential contamination of soil, surface or groundwater.

The destruction of reservoirs is possible as a result of the sudden action of seismic loads of various strengths. The liquid stored in the tanks begins to sense intense sloshing. The phenomenon of sloshing in partially filled tanks could lead to high pressure on the tank walls, collapse of its structure or loss of stability and could cause leakage of hazardous liquid [1-4].

The tank model has been built in the research as a rigid cylindrical shell of radius R with an elastic bottom on the elastic Winkler base. It has been considered that the tank is partially filled with the ideal incompressible liquid to a height of H , Fig. 1. It has been denoted S_0 as the free surface of the liquid, S_1 as the rigid cylindrical surface, and S_{bot} as the elastic surface of the bottom.

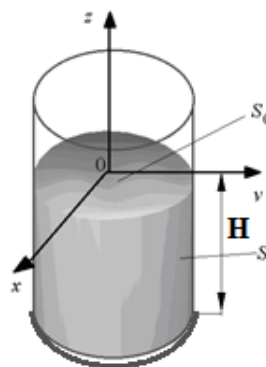


Figure 1. Cylindrical tank with the elastic bottom on the Winkler elastic base.

The Table 1 shows the lowest frequencies of axially symmetric oscillations of the elastic shell ($n = 0$) on the elastic Winkler base.

Table 1. Frequencies of axially symmetrical oscillations of the elastic shell on the elastic Winkler base [5-8]

J	Empty shell, Hz				Shell with liquid, Hz			
	h, m							
	0.01	0.005	0.003	0.0015	0.01	0.005	0.003	0.0015
6	25.336	13.254	12.692	18.353	6.381	3.330	3.305	4.634
7	42.132	21.793	15.852	15.558	15.974	8.0714	5.8718	5.7621
8	92.081	47.429	29.406	23.073	43.769	22.589	14.003	10.984

From the results presented in Table 1, it has been concluded that taking into account the Winkler elastic base, there is the increase in the lowest frequencies of elastic walls, and there is no dangerous convergence of the oscillations frequencies of elastic walls and liquid sloshing. Therefore, in the vibrations studying of thin shells partially filled with liquid, it is advisable to use methods that allow taking into account the soil influence.

Keywords: technogenic influence, hazardous liquid, seismic loads, storage tanks, petroleum products, sloshing.