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PRINCE EL HASSAN BIN TALAL OPENS WOMEN PHYSICIANS CONFERENCE AND CALLS FOR HEALTH SECTOR REFORM

His Royal Highness Prince El Hassan, Chairman of the Higher Council for Science and Technology (HCST), and Founding Patron of the Islamic World Academy of Sciences (IAS), attended the Fourth Jordanian Women Physicians Conference, held under the theme "Unlocking Healthcare Horizons: Train, Retain, Reform".

The event was organized in cooperation with the Royal Colleges of Physicians in London, Edinburgh & England, along with the European Association for the Study of the Liver (EASL).

In his address, Prince El Hassan stressed the importance of policy and governance in managing the health system, calling for a national health strategy that prioritizes needs based on evidence-based policymaking. He underscored the need for a single authority to oversee, regulate, and plan health financing across both the public and private sectors.

The Prince highlighted the importance of establishing a central body to provide guidance and coordination within the health sector, suggesting the reactivation of the Higher Health Council to set collective priorities, avoid duplication, and ensure continued progress.

He further emphasised strengthening integration and cooperation across public health programs, proposing the creation of a fund dedicated to crisis monitoring and management through preventive and proactive measures.

Prince El Hassan also called for diversifying sources of healthcare funding, including through development endowments that, he noted, are much needed in the Islamic world to empower citizens as active partners in decision-making.

On mental health, he underlined the urgency of placing it among national healthcare priorities, pointing to the growing number of Jordanians in need of psychological support amid limited allocations for mental health and community care.

News Source: The Jordan Times, 23 August 2025
https://jordantimes.com/news/local/prince-el-hassan-opens-women-physicians-conference-calls-for-health-sector-reform-condemns-gaza-destruction

GLOBAL DEBT AND THE RESTRUCTURING OF FINANCIAL POLICIES

Adnan Badran FIAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences

Introduction

We are living at a critical, exceptional crossroads in the history of our national, regional, and global economy. Economic growth requires injecting financial resources to modernize the economy, its mechanisms, and to build new economic sectors that societies today and in the future need within a world that is rapidly changing.

Therefore, we must restructure global policies in a world where the burden of debt is increasing to unprecedented levels. We need to reach a new approach that secures balance between revenues and expenditures within a sustainable financial system. We must revisit the outcomes of the Bretton Woods Conference (1944), which established the International Monetary Fund (IMF) and the World Bank after the Second World War.

The Scale of the Global Debt Crisis

Global debt has risen to record levels relative to global national income, reaching $303 trillion in 2024, equivalent to 348% of global GDP. This poses an existential threat to financial stability and a major risk to economic growth, as well as to the ability of societies worldwide to secure the basics of security, stability, food, clothing, and shelter across different regions and demographics.

This global debt crisis stems from the following:

1. **Slowed Economic Growth:** When external debt exceeds 90% of GDP, it leads to economic slowdown, limiting growth and consequently raising unemployment and poverty, particularly in developing countries.
2. **Widening Social Gaps:** Sovereign debt crises result in strict austerity measures that reduce social budgets, indirectly harming the most vulnerable groups in securing a decent life.
3. **Obstructed Public Investment:** Debt servicing consumes increasing shares of public budgets, limiting governments' ability to invest in infrastructure, education, and health, which in turn reduces economic growth and stability.

Restructuring Financial Policies

A study must identify the root causes of the global debt crisis:

1. **Natural and Humanitarian Disasters:** In response to the 2008 global financial crisis, the COVID-19 pandemic, and geopolitical events, governments expanded borrowing without clear plans to repay loans or manage interest burdens.
2. **Excessively Low Interest Rates:** Historically, ultra-low interest rates after 2008 encouraged reckless borrowing, fueling price increases and raising debt servicing costs, contributing to inflation.
3. **Weak Tax Policies:** Unplanned tax cuts and widespread tax evasion eroded tax bases in many countries, limiting their ability to reduce internal and external debt.

4. **Corruption, Mismanagement, and Poor Governance:** Many countries misused loans inefficiently, yielding low or negative returns.

A Framework for Comprehensive Restructuring

I propose a framework of five pillars:

1st Pillar: Reforming Debt Management Structures:

- Create a mandatory UN-supervised mechanism for sovereign debt restructuring.
- Link debt repayment conditions to debtor nations' financial capacity.
- Include natural disasters and global crises clauses in external debt agreements.

2nd Pillar: Ensuring Accountability and Financial Transparency:

- Require economic and social feasibility studies for every loan, internal or external.
- Use project returns to service debt.
- Apply international financial disclosure standards.
- Governments must submit periodic reports on loan use and funded projects.
- Strengthen parliamentary and civil society oversight over public debt.

3rd Pillar: Reforming the Global Tax System:

- Adopt a minimum global corporate tax rate (e.g., 15%).
- Enhance international cooperation to avoid double taxation.
- Ensure taxes are fair across social classes and capacities.

4th Pillar: Aligning Fiscal Policy with the SDGs 2030:

- Legislate green economy initiatives and sustainable financing.
- Ensure loans contribute to Sustainable Development Goals (SDGs).
- Direct investments toward the digital economy.

5th Pillar: Financial Adaptation and Resilience:

- Expand use of precautionary credit flexibility.
- Develop GDP-linked bonds.
- Establish sovereign wealth funds to stabilize against economic shocks.

Implementation Challenges

1. Political resistance to external debt restructuring.
2. Conflicting interests between financial institutions and investors.

Conclusion

1. A more sustainable global financial system must be achieved.
2. . Resolving global debt requires strong political will and unprecedented international cooperation for radical restructuring.
3. We must redesign the global financial system to achieve economic growth and build infrastructure for future generations through a system that is more sustainable, fair, and resilient.

OMAR HATAMLEH

Adnan Badran FIAS, FAAS
President, Islamic World Academy of Sciences
and President, Arab Academy of Sciences

Professor Omar Hatamleh is one of NASA's most distinguished figures in the fields of aerospace engineering and artificial intelligence.

Currently serving as the Chief Artificial Intelligence Officer at NASA's Goddard Space Flight Center, he plays a central role in shaping the agency's AI strategy and driving innovation across missions and institutional operations. His leadership of the "NASA 2040 AI Track" reflects a forward-looking vision for how advanced technologies can redefine the future of space exploration.

Born and educated initially in Jordan, Hatamleh graduated from the University of Jordan before pursuing graduate studies in the United States. He went on to earn a Ph.D. in Mechanical Engineering from the University of South Carolina, a Master's degree in Materials Engineering from North Carolina State University, and another Master's in Mechanical Engineering from California State University.

This strong academic foundation opened the door to a remarkable career at NASA, which he joined in 1997 as a Senior Engineer at the Johnson Space Center. Over the years, he rose through a series of leadership positions including Research Scientist, Deputy Chief Scientist at Ames Research Center, and later Chief Innovation Officer for Engineering at Johnson Space Center, a role he held from 2015 to 2020.

He then became Chief Advisor for Artificial Intelligence and Innovation, helping guide NASA's IT strategy at headquarters before assuming his current role.

In addition to his leadership within NASA, Hatamleh is a prolific researcher and writer. He has published more than thirty scientific articles in international engineering journals and is the co-author of the book *Between Brains*, which explores the transformative impact of artificial intelligence on society, ethics, the economy, and the future of work. His research and thought leadership have been cited more than 1,400 times, and he continues to contribute to global discussions on the responsible and innovative use of technology.

His outstanding contributions have earned him numerous awards and recognitions, including the NASA Silver Achievement Medal, the NASA Innovation Award, and the Superior Achievement Award. Beyond the agency, he has been ranked among the world's top thought leaders in artificial intelligence and innovation, and his expertise has been sought at prestigious venues such as the G20, Google, IBM, Dell, and the European Investment Fund. Media outlets including CNN and Forbes have also featured his insights on technology and innovation.

For many, Hatamleh's journey is deeply inspiring, not only because of his groundbreaking work at NASA but also because of what his story represents. As a proud alumnus of the University of Jordan, his rise to one of NASA's most forward-looking roles stands as a powerful example of how dedication, vision, and cross-disciplinary expertise can propel individuals onto the global stage. His career reflects a rare combination of technical excellence and strategic foresight, making him a global leader at the intersection of space science and artificial intelligence.

ZIZIPHUS NUMMULARIA EXTRACT ATTENUATES INFLAMMATORY MARKERS IN RAW 264.7 MACROPHAGES*

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Abstract

While inflammation is a vital immune response to harmful stimuli, chronic inflammation has been associated with several diseases such as arthritis, cardiovascular disorders, and cancers. Plant extracts, rich in bioactive compounds, have been used in traditional medicine to manage inflammation by modulating inflammatory pathways. Specifically, *Ziziphus nummularia* (Sidr), known for its anti-inflammatory, antioxidant, and antimicrobial properties, contains flavonoids, saponins, triterpenoids, and phenolics, but its mechanisms of action remain unclear. This study investigated the anti-inflammatory effects of an ethanolic extract from *Z. nummularia* leaves (ZNE) in lipopolysaccharide (LPS)-stimulated RAW 264.7 macrophages. ZNE significantly reduced the expression of pro-inflammatory enzymes (COX2, iNOS), inhibited the production of inflammatory mediators (NO, ROS, TNF-α, IL-6), reduced cellular migration and modulated key signaling pathways (NF-κB, STAT-3, MAPKs). These findings highlight the potential of ZNE as a natural therapeutic agent for inflammation, warranting further exploration of its mechanism of action and potential clinical applications.

Keywords Anti-inflammation, Ziziphus nummularia, RAW 264.7, MAPKs, NK-κB, STAT-3

Figure: *Ziziphus nummularia*

* *Link to the whole publication: https://www.nature.com/articles/s41598-025-07273-2*

DYNAMIC REMOVAL OF METHYLENE BLUE AND METHYL ORANGE FROM WATER USING BIOCHAR DERIVED FROM KITCHEN WASTE**

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Abstract

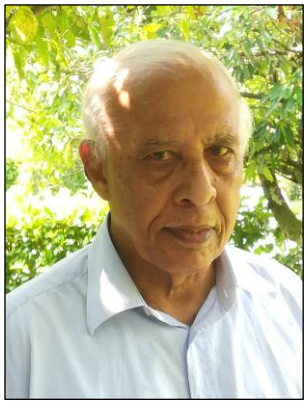
Access to pure and clean water is an upcoming challenge globally due to increased pollution by household waste and industrial effluents, specifically artificial dyes, which are not biodegradable and pose toxicity. Low-cost, mass-producible, and efficient technologies, particularly in developing environments, are highly needed. In this study, Kitchen waste derived biochar was prepared from orange peels (OP), potato peels (PP), banana peels (BP), and coffee residue (CR) via pyrolysis in a muffle furnace at 400 °C for 1 h. The prepared biochar was characterized by BET surface area analysis and Fourier Transform Infrared spectroscopy (FTIR). Low-cost kitchen waste derived biochar (KWDB)-sand composite filter material was developed as an eco-friendly adsorbent for the removal of a cationic Methylene Blue (MB) and an anionic dye Methyl Orange (MO) from aqueous solutions. Systematic research on contact time (0.5 to 24 h) and initial dye concentration (5–25 mg/L for MO and 180−10 mg/L for MB) was conducted. KWDB had extremely high and constant removal efficiency of a maximum of 99.5% for MB, while removal of MO was contact time dependent and had the following highest removal of 29% after 24 h. Higher initial dye concentration resulted in greater adsorption capacities. Langmuir isotherm analysis gave maximum adsorption capacities of 25.15 mg/g for MO and 30.40 mg/g for MB, which are greater than for most of the other biochars. Isotherm modeling further revealed that MO adsorption would be according to a multilayer, heterogeneous mode and MB adsorption according to a monolayer mode. This biochar-based filter is an efficient and scalable treatment system for water, particularly in situations with limited infrastructure, in which locally produced filters can be quickly implemented as part of inexpensive decentralized treatment systems. These findings confirm the design of biochar-enhanced filtration modules tailored for specific dye pollutants and environmental settings.

Keywords Kitchen wastes, Biochar, Dye, Column, Adsorption

** *Link to the whole publication:*
https://www.frontiersin.org/journals/pharmacology/articles/10.3389/fphar.2023.1201969/full

PROBLEM OF THE FREE NEUTRON MEASURED DECAY-LIFETIME VALUES

Mohammed Asghar[1] *FIAS*



Abstract: This text presents the measured free-neutron lifetime τ_n using the bottle and the neutron beam methods, which are significantly different. A possible but sill unverified solution is suggested.

1. Introduction.

Free neutron is an instable particle and decays into a proton, a negative electron and an antineutrino. Its decay lifetime τ_n in combination with other properties of neutron beta decay can be used to test the particle Standard Model.

2. Methods used to measure the lifetime of free neutrons:

a. Bottle method.

In this method, the material or the magnetic bottle, (Fig.1) is filled with a known number of ultracold neutrons that are confined to the volume of the bottle through their total reflection from the walls of the bottle. By counting the number of neutrons that remain after a certain interval, the neutron decay rate and, therefore, the average neutron lifetime τ_n is determined. The best value of neutron lifetime determined with a magnetic bottle **(1)**:

τ_n = 877.75 +\ - 0.039 % s (1)

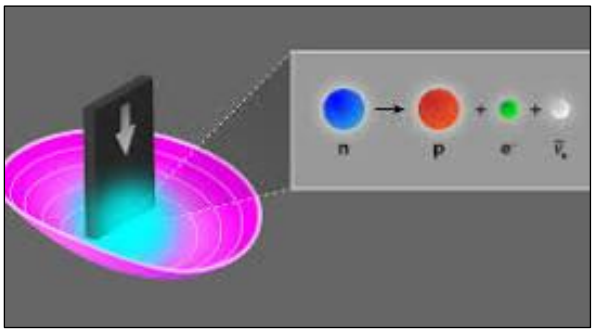


Fig. 1, Magnetic neutron bottle, National institute of Standard and Technology **(1).**

b. Neutron beam method.

Here, the neutron lifetime is determined by passing a continuously monitored known beam of cold neutrons through a proton trap, (Fig.2), where the number of protons resulting from the decay of neutrons are collected and periodically counted **(2).**

This work in 2013 led to a neutron lifetime:

τ_n = 887.7 +\ - 2.2 s (2)

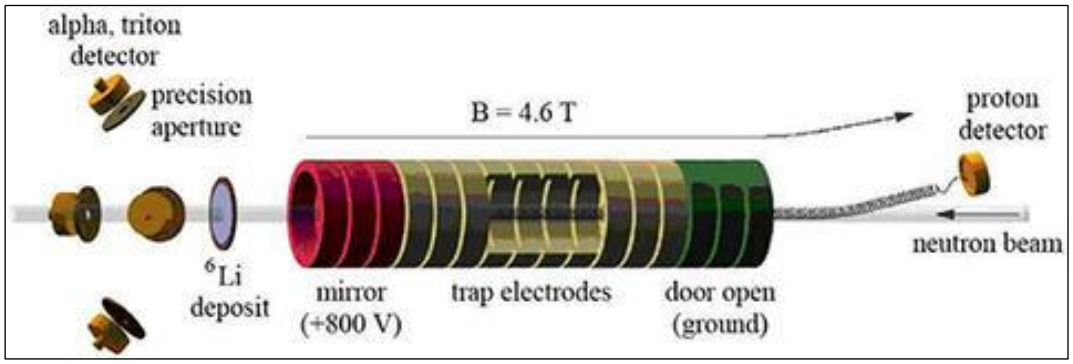


Fig. 2, An illustration of the method of measuring the lifetime with a cold neutron beam. The neutron flux of a cold beam is continuously monitored while protons created by neutron decay in the proton trap are confined and periodically emptied and counted **(2).**

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3. Problem of different τ_n values from the bottle and beam measurements and its possible solution.

The free neutron measured lifetime values presented via the relations (1) and (2), show that the neutron lifetime is about 10 s longer for the beam method than for the bottle method. Considering the high precision of the results, this difference is highly significant and puzzling. A possible solution to this problem has been presented in **(3, 4**). The authors suppose that when these neutrons are produced through the fission process in a reactor, they are a mixture of neutrons in their ground state and neutrons in their excited states. When these neutrons are stored in a bottle, they will exclusively end in their ground state before their decay, because it takes a while to cool them and store in the bottle. The resulting neutron lifetime will correspond to their decay in their ground state. However, for the work with a neutron beam containing a mixture of neutron in their ground state and neutrons in their excited states, the measured neutron lifetime should be higher than the bottle-based value, because an extra time is needed for the neutron excited states to decay to the ground state, before it disintegrates into a proton, a negative electron and an antineutrino. The experimental data confirm this idea, and about 10 s difference between the beam and the bottle values should be due to the presence of neutron excited states in the neutron beam. However, the present situation is delicate, because there are not any known neutron excited states. These authors are preparing a collaborative effort with the experts in neutron physics to look for these excited neutron states, if they exist. If nothing comes out of this work, one has to question the quality of the measured neutron lifetimes.

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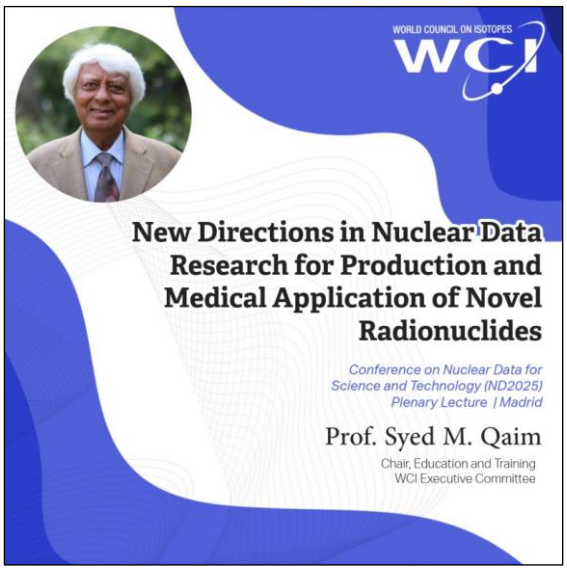
WCI LEADERSHIP IN ACTION PROF. SYED M. QAIM FIAS PLENARY AT ND2025



Prof. Syed M. Qaim (Forschungszentrum Jülich, Germany), Chair of Education and Training at the WCI Executive Committee, delivered a plenary lecture at the 16th International Conference on Nuclear Data for Science and Technology (ND2025) held in Madrid this June.

His presentation, titled "New Directions in Nuclear Data Research for Production and Medical Application of Novel Radionuclides," addressed the growing global demand for accurate nuclear data to support advancements in theranostics and the production of novel medical radionuclides.

Key highlights from the lecture included:

- The emerging role of α-particle beams, photonuclear, and heavy-ion induced reactions.
- Nuclear data needs for advanced PET and therapeutic radionuclides (e.g., ^{64}Cu, ^{86}Y, ^{225}Ac).
- The importance of sustained international collaboration through the IAEA and national laboratories.

As a leading figure in isotope education and training, Prof. Qaim continues to shape the global trajectory of nuclear data science.

The full lecture is available on the WCI website: https://wci-ici.org/05_train/train02.html?Item=board8&mode=view&s_t=1&No=2031

MICROPLASTICS: AN ESCALATING GLOBAL THREAT TO HEALTH AND THE ENVIRONMENT

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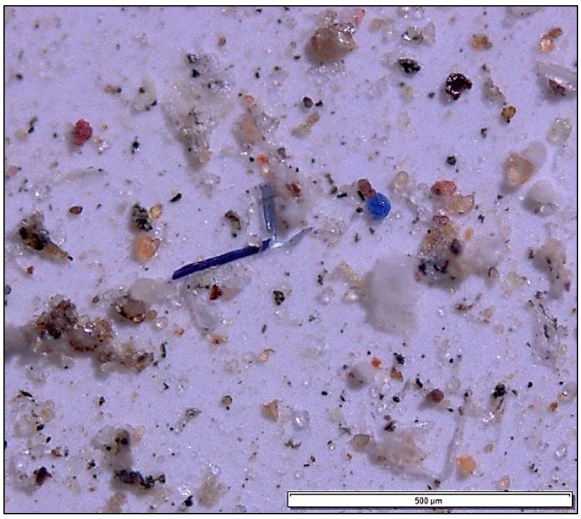
Plastic production has surged over the past decades, reaching 368 million metric tons globally in 2019, with Asia contributing half. While briefly slowed by COVID-19, demand quickly rebounded due to increased reliance on disposable masks and packaging. Originally developed to benefit society, plastics have become omnipresent pollutants in air, water, and soil. Only 10% of the 6,300 million tons of plastic waste produced has been properly recycled; the rest persists in ecosystems, breaking down into microplastics (MPs) and nanoplastics (NPs) that now contaminate nearly every corner of the planet.



What Are Microplastics and Nanoplastics?

Microplastics (less than 5 mm) and nanoplastics (less than 1000 nm) originate from the degradation of larger plastic items or are directly released from products like microbeads, textiles, and synthetic fibers. These particles infiltrate the environment through littering, wastewater discharge, atmospheric deposition, and runoff from agriculture and urban areas.

Found from Arctic ice to deep-sea trenches and agricultural soils (sometimes at concentrations 23 times higher than ocean levels), MPs persist for decades. Their varied shapes - fragments, fibers, granules, foams—allow them to travel widely and interact with ecosystems in complex ways. They also serve as vectors for toxic chemicals and pathogens, intensifying their environmental and health impact.

Environmental Transport and Ecological Impact

MPs spread through air, water, and soil, degrading under UV light, microbial action, and physical forces. They accumulate in both terrestrial and aquatic systems, compromising soil fertility, harming plant life, and disturbing microbial communities. In marine environments, MPs are consumed by organisms ranging from plankton to whales, often entering the food chain via trophic transfer.

An estimated 15 to 51 trillion microplastic fragments now pollute the oceans. Marine filter feeders like mussels, and apex predators like marine mammals, ingest these particles, experiencing tissue inflammation, organ damage, and reproductive issues. Similar findings have been reported in terrestrial species - including birds, earthworms, and even mosquitoes - which facilitate microplastic transfer across food webs.

Human Exposure and Health Risks

Humans are exposed to MPs primarily through ingestion and inhalation. Seafood, especially shellfish, drinking water, sea salt, and even everyday items like plastic containers contribute to microplastic intake. A single person may unknowingly consume over 100,000 particles annually. Alarmingly, one plastic cup can release up to 90,000 microplastic particles.

MPs and NPs are capable of crossing biological membranes, accumulating in organs such as the lungs, liver, kidneys, and even fetal tissues. They can cause inflammation, oxidative stress, and potentially carcinogenic effects. Additives like bisphenol A (BPA) and di-(2-ethylhexyl) phthalate (DEHP), common in plastics, are endocrine disruptors linked to hormonal imbalance, infertility, metabolic disorders, and weakened immunity. MPs also disturb the human gut microbiome and may act as carriers for pathogens and environmental toxins.

Agricultural and Food Chain Contamination

MPs degrade soil quality and may hinder plant growth and nutrient uptake. They are absorbed by crops and transferred through the food chain, appearing in milk, honey, fruits, and vegetables. In freshwater systems, they are found in drinking water sources and aquatic food. Given their pervasiveness, food security and agricultural sustainability are increasingly at risk.

Challenges in Microplastic Detection and Control

Efforts to manage MP pollution face several barriers:

- *Analytical Limitations:* Current detection methods struggle with small particle sizes and complex matrices like soil, food, and water.
- *Polymer Diversity:* MPs vary in composition and degrade differently, complicating identification and toxicity assessment.
- *Weak Regulations:* Many plastic bans face poor enforcement or public resistance.
- *Public Perception:* Misunderstanding of the issue reduces support for behavioral change and policy action.
- *Technological Gaps:* Advanced treatment systems like membrane bioreactors and reverse osmosis are promising but costly and not yet widely adopted.
- *Plastic Additives and Heavy Metals:* Additives and fillers leach toxic metals like cadmium, lead, and zinc, which accumulate in aquatic organisms and pose serious health risks.

Global Strategies and Mitigation Priorities

To effectively tackle MP pollution, both immediate and long-term strategies are needed:

Short-Term Actions:

- *Source Reduction:* Ban or limit single-use plastics such as bags, straws, and packaging.
- *Improved Waste Management:* Enhance collection, sorting, and recycling infrastructure.
- *Alternative Materials:* Invest in biodegradable, eco-friendly substitutes.

Long-Term Directions:

- *Public Education and Lifestyle:* To control and reduce microplastics, education must begin at the family level and be reinforced through comprehensive school programs that integrate environmental awareness into various subjects. Schools should teach students about the sources, dangers, and long-term effects of microplastics through engaging lessons, hands-on activities, and community projects. This education must go beyond theory, promoting sustainable habits and proper recycling. At the societal level, these values should be supported through public campaigns, social norms, and policymaking, so that environmentally conscious behavior becomes not just a choice but a shared and sustainable way of lifestyle.
- *Health Impact Research:* Longitudinal studies on chronic human exposure and toxicity are urgently needed.
- *Environmental Monitoring:* Standardized detection techniques and global monitoring networks can support better tracking of MP pollution.
- *Circular Economy:* Policies promoting recycling, reuse, and material innovation can reduce overall plastic production.
- *Technological Innovation:* Enzymatic plastic degradation and advanced chemical recycling show promise for waste minimization.

Conclusion

With plastic production exceeding 400 million metric tons annually and only a fraction properly managed, microplastics now pose a complex, global challenge comparable to climate change. Their ability to persist, bioaccumulate, and cause harm across ecosystems and human populations demands urgent, coordinated action.

Tackling this issue requires more than isolated regulations—it calls for integrated efforts across science, policy, industry, and civil society. Only through a multidisciplinary approach can we hope to reduce the spread and impact of microplastics and ensure a safer, more sustainable future for all.

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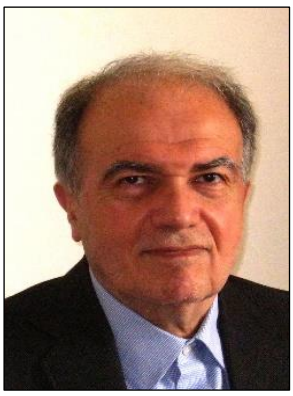

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Ali A. Moosavi-Movahedi is Professor of Biophysics and Head of Institute of Biochemistry and Biophysics, University of Tehran (UT). Born in Shiraz, Iran, in 1953; BSc in Chemistry, National University of Iran,1975; MSc in Chemistry, Eastern Michigan University, USA, 1979; PhD in Biophysical Chemistry, University of Manchester, UK, 1986. His research career has been mostly marked on Biothermodynamics and protein structure function relationship. He is already the Fellow of Iran Academy of Sciences, Fellow of Islamic World Academy of Sciences, Fellow of The World Academy of Sciences (TWAS), and the Chair-holder of UNESCO Chair on Interdisciplinary Research in Diabetes, at UT.

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MUSTARD SEED AND DIVINE JUSTICE

Muhammad Iqtedar Husain Farooqi
Deputy Director Retired, National Botanical Research Institute
Lucknow – Government of India

Quranic Name: *Khardal* (خَرْدَلٍ)
Indian Name : *Rai,*
Other Names : Mustard (Eng.), Mautarde (Fr.), Senf (Ger.), Mostaza (Sp.), Mostarda (Gr.), Sinapis (Lat.), *Mostrich* (Ger.) *Muster-Moster* (Indonesian) *Senape* (It.) Khardal (Arab, Pers.), Ispindan (Pers.).Rai (Hindi, Urdu, Mar.), Sarshap-harika (Sans.), Rai Surrha (Beng.), Kargn (Tam.), Aasar (Kash.), Awalu (Tel.), Kadukul (Mal.).
Botanical Name : *Brassica nigra* Koch- Black Mustard: *Sinapis alba* – white/yellow mustard (Family :Brassicaceae)

In the Arab world and other parts of the world, mustard (**Khardal**) is considered to be the smallest of all plant seeds. The Arabic name for this plant is also *Al-Arak* (*Salvadora persica*), and it seems that it came to be called khardal much later than the revelation of the Quran. The original reason for this may be that the fruits of Al-Arak taste similar to mustard oil.
The mustard seed is mentioned twice in the Holy Quran by the name **khardal**. This mention is intended to explain the intricacy of divine justice.

Through this small seed, the Holy Quran and blessed Hadiths convey the message that no act, no matter how small or hidden, remains concealed from the sight of Allah. In essence, this tiny seed reveals a very great truth.

The mention of mustard by the name khardal is given as an example in the Quran both times to highlight a small action or event that God is aware of.

In **Surah Luqman (XXXI), verse number 16**, Allah says:

"O my son! If there be (an act as small as) the weight of a mustard seed, and it be (hidden) in a rock or in the heavens or on earth, Allah will bring it forth. Verily, Allah is Most Subtle, All-Aware."

This verse is a piece of advice from Luqman the Wise to his son, which teaches us that nothing is hidden from the knowledge and justice of Allah, even if it is as small as a mustard seed.

It is said about Luqman the Wise that he was not a prophet, nor did he have any connection to the Arab nation, but Allah had blessed him with knowledge, wisdom, and great sagacity. About him, Allah says:

"And We certainly gave Luqman wisdom and said, 'Be grateful to Allah.' And whoever is grateful, he is only grateful for the benefit of his own soul." (Surah Luqman, verse 12)
The sayings of Luqman the Wise were well-known in the Arab world. It was a common belief that he belonged to a region in Africa.

He is considered a revered figure, a wise and righteous man of Allah, who was granted wisdom and understanding. There are differences in historical accounts and interpretations, but he is often described as a Black man from Nubia, possibly an Abyssinian slave who lived during the time of Prophet David (peace be upon him). According to Ibn Kathir, it is believed that Luqman was a native of Nubia, Sudan, or Ethiopia. Ibn Kathir says that Luqman's words reveal a deep understanding of Allah's power and human responsibility. However, Ibn Kathir completely rejects the stories attributed to Luqman the Wise from the Israeli traditions. There is no authenticated saying of the Prophet (PBUH) about Luqman the Wise, but many narrations in *Sahih al-Bukhari* and *Muwatta Imam Malik* contain detailed discussions about him.

Abdullah Yusuf Ali, in his commentary on *The Holy Quran*, describes Luqman as a highly respected and revered figure in Arab tradition,

who is held in high esteem for his wisdom, humility, and moral insight, even though little historical information is available about his life.

The second mention of mustard (**khardal**) in the Quran is as follows:

"And We will place the scales of justice for the Day of Resurrection, so no soul will be wronged at all. And if there is (an act) the weight of a mustard seed, We will bring it forth. And sufficient are We as an accountant." (Surah Al-Anbiya, verse 47)

According to various commentaries, in this verse, Allah Almighty mentions justice and accountability on the Day of Judgment, and states that no one will be wronged, no matter how small the deed.

In his commentary, Maulana Shabbir Ahmad Usmani states that even an act as small as a mustard seed will be weighed in the scales, and every bit of a person's account will be settled. The reason for giving the example of the mustard seed is that in the Arab world and other regions, it is considered the smallest of all plant seeds.

The mention of the mustard seed is also particularly prominent in the Hadiths, where the Holy Prophet (PBUH) has explained its importance in the context of faith and salvation.

It is narrated from Abdullah ibn Mas'ud (may Allah be pleased with him) that the Messenger of Allah (PBUH) said:
"No one will enter Paradise who has a mustard seed's worth of pride in his heart." (*Sahih Muslim*)

It is narrated from Abdullah ibn Mas'ud (may Allah be pleased with him) that the Messenger of Allah said: "No person will enter Hell who has a mustard seed's worth of faith in his heart, and no person will enter Paradise who has a mustard seed's worth of pride in his heart." (*Muslim, Ibn Majah*)

It is narrated from Anas ibn Malik (may Allah be pleased with him) that the Holy Prophet (PBUH) said: "On the Day of Resurrection, I will intercede and say, 'O my Lord! Admit into Paradise those who have a mustard seed's worth of faith in their hearts.'" (*Sahih Muslim*)

It is narrated from Abu Hurairah (may Allah be pleased with him) that the Messenger of Allah (PBUH) said:
"He who has a mustard seed's worth of faith in his heart will not enter the Fire."

Abu Sa'id al-Khudri (may Allah be pleased with him) narrates from the Holy Prophet (PBUH) that he said:

"(When) the people of Paradise enter Paradise and the people of Hell enter Hell, after that Allah will say (to the angels) to take out from Hell anyone who has a mustard seed's worth of faith in his heart." (*Sahih Muslim*)

These Hadiths encourage believers to focus on their deeds and intentions, no matter how small they may be, and inspire them to develop humility and strong faith.

The mustard seed also holds significance in Prophetic Medicine, طب النبوی, where it is considered beneficial for expelling phlegm and treating certain physical ailments. The terms "**raai**" and "**sarson**" are generally used for black and yellow mustard seeds, which are both derived from different varieties of the *Brassica* family. Although both are mustard seeds, raai typically refers to the smaller, brown seeds of *Brassica nigra*, while sarson generally refers to a different variety with slightly larger, yellow seeds. Some people also call sarson as *Brassica juncea* or Sinapis alba.

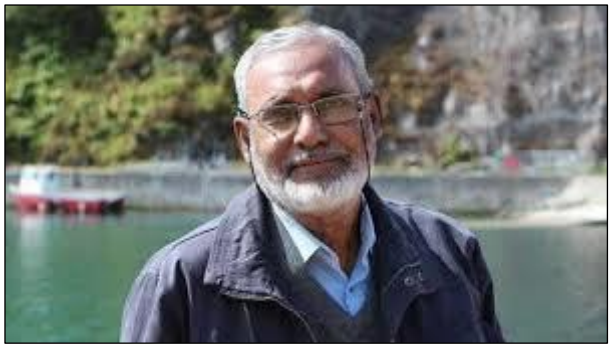
Oil is extracted from both seeds. India is the world's largest producer and exporter of mustard oil, earning approximately 15 billion rupees in foreign exchange annually. Rajasthan has the largest cultivation of mustard, followed by Uttar Pradesh.

Mustard seeds contain more than 25% oil (fat), which is commercially extracted in many countries. It contains a glucoside called **Sinigrin**, and an enzyme named **Mysorin** has also been extracted from it.

Mustard seeds are an emetic (vomit-inducing medicine) and are also used in poultices. They are used in spices and have rubefacient properties medically.

The mercy of Allah is boundless. A true faith as small as a mustard seed can also be a source of a person's salvation.

THE LATE
PROF. SHAMSHER ALI (BANGLADESH)



(1937 – 2025)

It is with a sense of sadness and sorrow that the Secretariat of the Islamic World Academy of Sciences (IAS) announces the passing away of the eminent scientist and IAS Fellow, **Prof. Shamsher Ali (Bangladesh).**

Early Life and Academic Foundations

Born in Bheramara, Kushtia, in1937 , Prof. Ali embarked on an academic journey marked by distinction. He traveled from Jessore Zilla School and Rajshahi College to earn his BSc (Honours) and MSc in Physics at Dhaka University by 1960. He further advanced his expertise in Theoretical Nuclear Physics at the University of Manchester, obtaining a PhD in 1965, a rare academic achievement for his time.

Scientific Contributions and Leadership

Prof. Ali began his career with the Pakistan Atomic Energy Commission ,later rising to Director of the Atomic Energy Centre in Dhaka(1978–1970) , where he played a crucial role in laying the foundations of nuclear science in Bangladesh.

In 1982, he joined Dhaka University as a full Professor of Physics, a position he held until 2006, after being named a lifelong Honorary Professor in 1973, honoring his nuclear physics contributions.

Institutional Visionary

Prof. Ali's vision extended far beyond the laboratory. He was the founding Vice-Chancellor of both Bangladesh Open University (1992-1996) and Southeast University (2002-2010), pioneering accessible and private higher education in Bangladesh.

He also led the Bangladesh Academy of Sciences as its President from 2004 to 2012, championing scientific research and policy as drivers of national development.

Recognition and Legacy

Throughout his extraordinary career, Prof. Ali received numerous prestigious awards, including:

Hari Prasanna Roy Gold Medal for contributions to nuclear physics (D.U.).

Bangladesh Academy of Sciences Gold Medal .

TWAS-ROCASA Award for promoting public understanding of science.

Lifetime Achievement Award in Higher Education Leadership, Malaysia.

He was elected a Fellow of the Islamic World Academy of Sciences in 1988.

Champion of Integrated Science Education

Prof. Ali firmly believed in making physics and mathematics engaging and accessible at all educational levels. His teaching spanned quantum mechanics, nuclear physics, and mathematical modeling, often presented with clarity to ignite intellectual curiosity in students nationwide.

Professor M. Shamsher Ali leaves behind a legacy that transcends the boundaries of science and education. A revered scholar, an institutional architect, and a public servant of ideas, his life was dedicated to nurturing knowledge for the public good. As Bangladesh continues on its journey of scientific growth and educational expansion, his contributions remain guiding lights toward a brighter future.

انّا للّٰه وانّا اليه رٰجعون

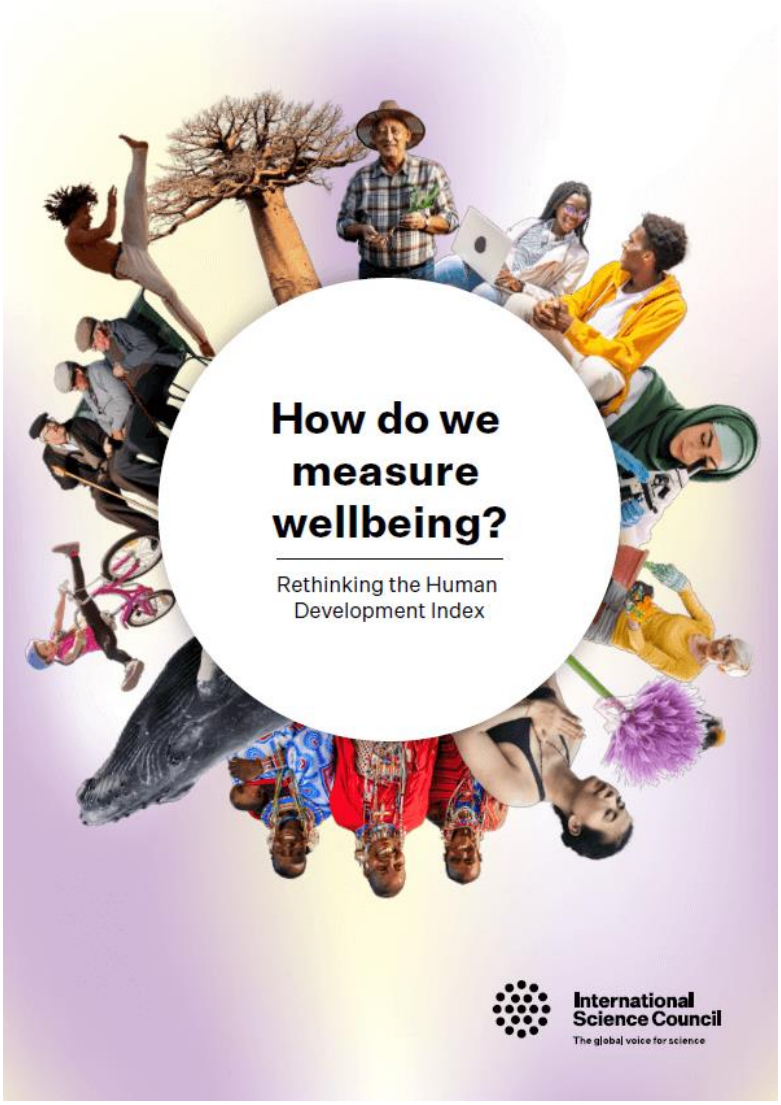
Innalillahi wa Inna ilaihi Rojiun

Indeed we belong to Allah and indeed to him we will return

ISC WORKING PAPER
HOW DO WE MEASURE WELLBEING? RETHINKING THE HUMAN DEVELOPMENT INDEX

This working paper explores how we define and measure human wellbeing in the 21st century. Building on a targeted expert consultation, it examines the relevance of the Human Development Index (HDI) in today's complex global context and outlines key pathways for its evolution to better reflect agency, inequality, sustainability, and other emerging dimensions of human development.

This paper reflects a growing consensus that existing development metrics, while influential, no longer capture the full picture of human wellbeing. The HDI has played a pivotal role in shifting the global development narrative beyond income. With evolving social, environmental and technological contexts and progress in our conceptual understanding of wellbeing, does the HDI continue to serve its purpose including in addressing urgent, interconnected challenges such as climate risk, social fragmentation, and structural inequality?



Through interviews and consultations with global experts across disciplines, the paper highlights opportunities to revise the HDI and develop complementary indices. Recommendations include integrating subjective wellbeing, improving disaggregation, and exploring new dimensions such as environmental sustainability and agency.

There seems to be a broad agreement that the HDI continues to have value as a measure and there are options to build on its foundations to construct a more inclusive, nuanced and future-oriented measurement framework.

Download the Report: https://council.science/wp-content/uploads/2025/07/Rethinking-measurement-of-Human-Development-2025-07-21.pdf

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PICKS OF THE CHIEF EDITOR

TOP 10 NANOTECHNOLOGY INNOVATIONS FOR 2025*

10. AN ANTIBACTERIAL NANOFIBER DISINFECTANT TO CLEAN OUT THE COMPETITION

Traditional disinfectants, commonly used in industries and consumer markets, often contain harsh chemicals like sodium hypochlorite, causing corrosion, respiratory irritation, and damage to surfaces. These chemicals accelerate rust on metal equipment and pose health risks to workers. There's a growing need for safer, eco-friendly alternatives that effectively disinfect without harmful side effects.
Using the electrospinning technique, researchers at The American University in Cairo have developed a disinfectant that transforms natural polysaccharides like chitosan into antibacterial nanofibers. Their solution is antibacterial and anti-corrosive whilst avoiding harmful chemicals and is suitable for use on various surfaces including stainless steel.

9. IMPROVING COATING BARRIER PERFORMANCE THROUGH A NANOCLAY ADDITIVE

Waterborne coatings are desirable over solvent-based coatings as they reduce the amount of volatile organic components, with benefits to the environment, safety and the cost of manufacturing. However, they often have reduced barrier performance, which can be improved by adding nanoparticles to minimize water absorption.

Researchers at Portland State University have developed a nanoclay additive that can be modified into nanoparticles using commercially available additives, leading to reduced water absorption whilst maintaining transparency. Their innovation extends the lifespan of coatings used in infrastructure, automotive, and outdoor applications through effectively preventing water damage.

8. ECO-FRIENDLY DISINFECTANT MADE FROM TEA AND OILS

Food and water contamination pose a serious global health challenge, especially in densely populated, developing regions where infectious diseases spread rapidly due to poor sanitation. Traditional disinfectants often fall short in providing lasting protection against bacteria, viruses, and fungi, leading to heightened risks of illness.

* *Source: https://www.inpart.io/blog/top-10-new-nanotechnology-innovations*

Scientists at The American University in Cairo have developed a method to convert green tea and peppermint oils into nanoparticles, enhancing their antimicrobial potency and stability. Their eco-friendly, biodegradable particles provide extended protection for up to 96 hours and can be applied in multiple formats like powders, liquids, and gels.

7. Sprayable nanofibers to treat skin wounds

Skin injuries like burns account for an estimated 180, 000 deaths annually according to the WHO and chronic wounds and trauma are a global health concern, affecting millions annually. While advancements in medicine have improved outcomes, there's still a need for better methods to enhance healing. Researchers at the University of Southern Mississippi are tackling this by developing innovative materials that optimize the healing environment for skin regeneration.

Their breakthrough involves sprayable peptide amphiphile nanofibers that self-assemble into scaffolds mimicking the body's extracellular matrix. These scaffolds can deliver cells, drugs, and growth factors directly to wounds, accelerating tissue repair.

6. Non-viral nanoparticle delivery system - A stroke of gene-ius.

While genome editing is proven to have the potential to treat many incurable and complex diseases, the issue of delivery is becoming a source of debate. Viral delivery can result in unwanted immune responses or off-target effects, but non-viral complexes are often too large and unstable, limiting their biological distribution and clinical use.

Researchers at the Monash Institute of Pharmaceutical Sciences have developed a means of assembling neutral or negative DNA particles that don't need non-aqueous solvents. This technology, which has been evaluated in animal studies, has potential applications in delivery of nucleic acids for vaccination, gene silencing or protein expression.

5. Using cellulose nanocrystals to put pests to rest

According to the European Environment Agency substances like organic solvents and surfactants within traditional chemical pesticides are linked to increased biodiversity loss as well as chronic illnesses such as cancer, and heart, respiratory and neurological diseases. As such, there is a pressing market and societal need for an environmentally-friendly and non-harmful solution to this issue.

Scientists at University of Waterloo have developed an effective agro/aquachemical delivery system that utilizes nanomaterials as carriers or dispersing agents. The cellulose nanocrystals used create aqueous nano-dispersions of pesticides that are not only sustainable, but also more efficient as measured by the mortality of the target organisms.

4. Making ultralight work of reducing household fires through nanocellulose aerogel

Around 350,000 homes in the United States alone experience a fire each year, resulting in 1,721 fatalities in 2024. While modern buildings increasingly use flame retardant materials that also act as a thermal insulator, most buildings use flammable organic and petroleum-derived materials like polystyrene, with flame retardant

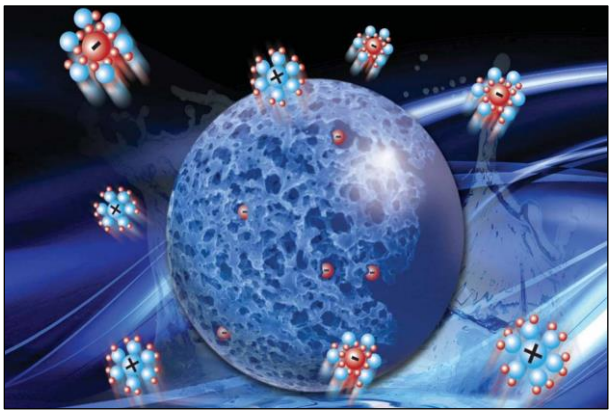
additives. During a fire, these additives create toxic byproducts such as halogenated hydrogen and phosphorous oxide, which are harmful to both humans and the environment.
What fights fire? Freezing of course! The aerogel developed by scientists at Northeastern University made through freeze-drying cellulose nanofibers and metallic phase MoS2 means more oxygen is needed for combustion and improves fire resistance. The nanobarrier effect suppresses the external heat source and even lessens the release of toxic substances.

3. A BIOACTIVE INGREDIENT DELIVERY NANOMATERIAL TO LITERALLY SAVE YOUR SKIN

Many active ingredients in skincare products are embedded in a matrix designed to control the speed of said ingredients. However, much of the drug can become trapped in the matrix, leading toa high level of active ingredient being wasted. Additionally, patients often report skin irritation from the adhesive materials that are environmentally unfriendly.
The technology tested in this project by the team at University of East Anglia overcomes these problems by absorbing the active ingredients into nanofiber sheets which are made of safe, scalable and biocompatible materials. This delivery method can incorporate many active ingredients, with a skin-like feel, making it perfectly suited to both the cosmetic and pharmaceuticals industries.

2. "FROZEN SMOKE" A HOT NEW AEROGEL TECHNOLOGY

Nanomaterials are crucial in the fields of energy storage, water purification, and catalysis due to the unique properties that they possess. Whereas traditional materials can lack the mechanical strength, porosity, and thermal properties required, aerogels, a diverse class of porous, solid materials, can be highly effective.
Scientists at Lawrence Livermore National Laboratory have a long history of developing aerogels and the researchers working on the technologies can tailor the structures depending on what its being used for. The team at LLNL are looking for partners to develop and commercialize their aerogels for a wide-range of uses, including 3D printing, water desalination, and catalysis.



1. THE COMPLETE PACKAGE! A SUPERIOR PRODUCTION METHOD FOR BIOPOLYMER COMPOSITE FILMS

In 2025, plastic pollution is, and will remain, one of earth's most pressing environmental threats, and the packaged food market is still growing rapidly. In fact, it is estimated to be valued at a huge $3.4 trillion by 2030. Despite efforts to improve sustainability, 90% of packaging is still non-degradable and single-use and while the introduction of biopolymers is increasingly attractive, there are still issues to be addressed. These issues include water and oxygen permeability, mechanical brittleness and thermal stability.
The team over at North Carolina State University introduce a biopolymer composite film composed of agarose and nanofibrillated chitosan to serve as a sustainable alternative to petroleum-based packaging. Their films offer better strength, water vapor and oxygen permeabilities and have desirable aesthetic qualities as they are transparent, waterproof and won't swell.

THABIT IBN QURRA*
(836 - 901 AD)

Thabit Ibn Qurra Ibn Marwan al-Sabi' al-Harrani was born in the year 836 AD at Harran (present turkey). As the name indicates he was basically a member of the Sabian sect, but the great Muslim mathematician Muhammad Ibn Musa Ibn Shakir, impressed by his knowledge of languages, and realising his potential for a scientific career, selected him to join the scientific group at Baghdad that was being patronised by the Abbasid Caliphs. There, he studied under the famous Banu Musa brothers. It was in this setting that Thabit contributed to several branches of science, notably mathematics, astronomy and mechanics, in addition to translating a large number of works from Greek to Arabic. Later, he was patronised by the Abbasid Caliph al-Mu'tadid. After a long career of scholarship, Thabit died at Baghdad in 901 AD.

Thabit's major contribution lies in mathematics and astronomy. He was instrumental in extending the concept of traditional geometry to geometrical algebra and proposed several theories that led to the development of non-Euclidean geometry, spherical trigonometry, integral calculus and real numbers. He criticised a number of theorems of Euclid's elements and proposed important improvements. He applied arithmetical terminology to geometrical quantities, and studied several aspects of conic sections, notably those of the parabola and the ellipse. A number of his computations aimed at determining the surfaces and volumes of different types of bodies and constitute, in fact, the processes of integral calculus, as developed later.

In astronomy, he was one of the early reformers of Ptolemaic views. He analysed several problems related to the movements of sun and moon and wrote treatises on sundials.

In the fields of mechanics and physics, he may be recognised as the founder of statics. He examined conditions of equilibrium of bodies, beams and levers.

In addition to translating a large number of books himself, he founded a school of translation and supervised the translation of a further large number of books from Greek to Arabic.

Among Thabit's writings, a large number have survived, while several are not extant. Most of the books are on mathematics, followed by astronomy and medicine. The books have been written in Arabic but some are in Syriac. In the Middle Ages, some of his books were translated into Latin by Gherard of Cremona. In recent centuries, a number of his books have been translated into European languages and published.

He carried further the work of the Banu Musa brothers and later his son and grandson continued in this tradition, together with the other members of the group. His original books as well as his translations accomplished in the ninth century exerted a positive influence on the development of subsequent scientific research.

* *Source: Personalities Noble, 2nd Edition, 2000, Edited by Hakim Mohammed Said, published by IAS with permission of Hamdard Foundation Pakistan.*

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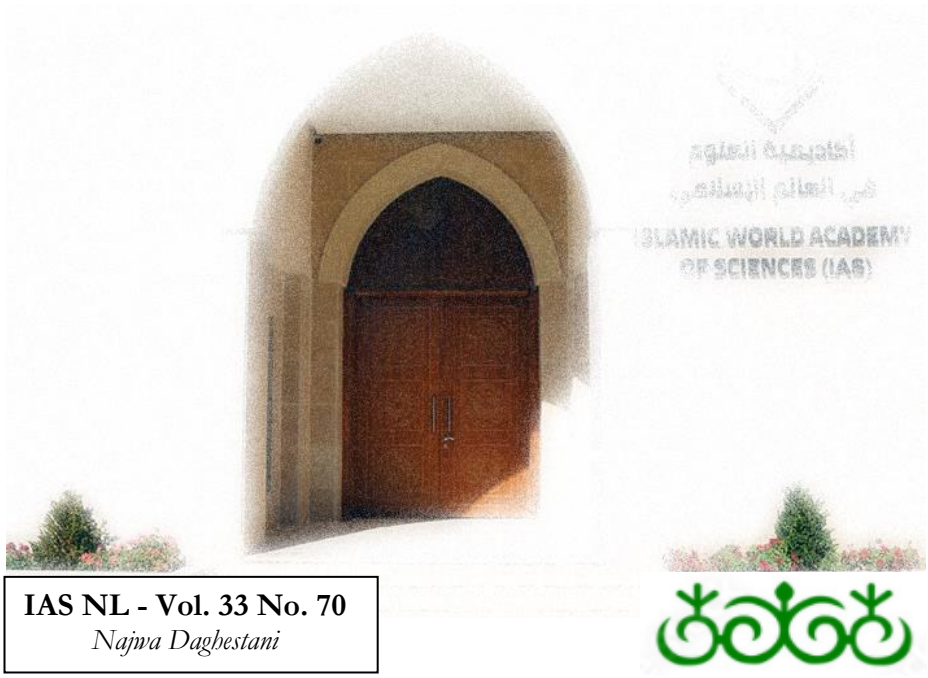

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