

Quantum dots

The 2023 Nobel Prize in Chemistry has been awarded to three people who found out what happened.

Technically, they have been selected for discovering and refining quantum dots small crystals a few nanometers wide.

Each quantum dot has only a few thousand atoms (whereas a single droplet of water can have a sextillion).

And because the atoms are packed so closely together in the dot, their electrons are very close to each other.

In this setting, the laws of quantum mechanics describe the behaviour of quantum dots so much so that an entire dot can mimic the behaviour of an atom. The dots have another famous property.

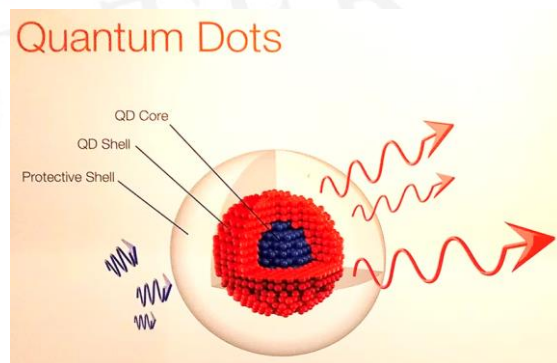
If you shine some light on a quantum dot, it will absorb and re-emit that

light at a different frequency (or colour) depending on its size.

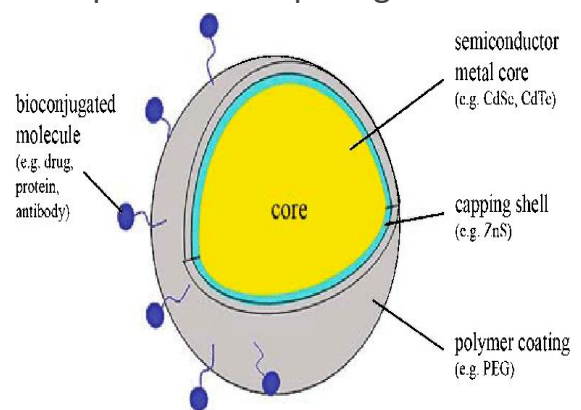
Smaller dots emit light of higher frequency (bluer) and vice versa.

So, a quantum dot made of some material would respond in one way whereas a quantum dot made of the same material but smaller would respond differently.

For these reasons, quantum dots have found many applications in transistors, lasers, medical imaging,

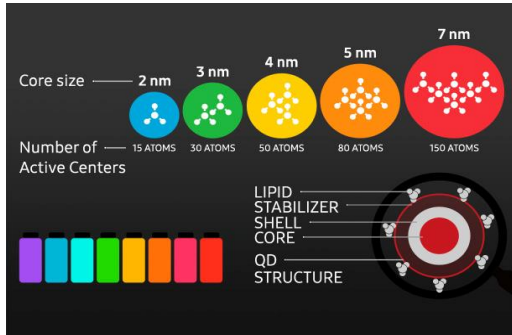


and quantum computing



While quantum dots light up LED screens and the location of a tumors

that needs to be removed, it is important not to lose sight of the colors the reds, the greens, and the blues.



The Hindu

personnel would be asked to leave the islands

The Hindu



The Hindu

Importance of Maldives

India looks forward to engaging the new Maldives government on “all issues”, the Ministry of External Affairs (MEA) said on Thursday, responding to the Maldivian President elect Mohamed Muizzu’s statement that Indian military

Global Internet freedom

According to a new report by Freedom House, a Washington-based nonprofit organisation, global Internet freedom has declined for the 13th consecutive year.

The environment for human rights online has deteriorated in 29 countries, with only 20 countries registering net gains.

The report, titled “Freedom on the Net 2023: The Repressive Power of Artificial Intelligence”, has raised a

10 REASONS WHY MALDIVES IS IMPORTANT FOR INDIA

1. Strategically located in the Indian Ocean, Maldives archipelago comprising 1200 coral islands lies next to key shipping lanes which ensure uninterrupted energy supplies to countries like China, Japan and India.
2. Since China started to send naval ships to Indian Ocean roughly 10 years ago – and right up to Gulf of Aden for anti-piracy operations – Maldives’ significance has steadily grown and now its at the heart of international geopolitics.
3. As the pre-eminent South Asian power and a net security provider in the Indian Ocean region, India needs to cooperate with Maldives in security and defence sectors.
4. China’s massive economic presence in Maldives is a major concern for India. With the country now said to owe 70% of its external aid to China, India had to push back. The current political crisis might just have offered India the right opportunity.
5. A large section of population which supports the opposition parties like Nasheed’s MDP wants India to act against Yameen.
6. Maldives is also a member of SAARC. It is important for India to have Maldives on board to maintain its leadership in the region. Maldives was the only SAARC country which seemed reluctant to follow India’s call for boycott of SAARC summit in Pakistan after the Uri attack.
7. Under Yameen, radicalization grew rapidly and it was often said that the archipelago accounted for one of the highest numbers of foreign fighters in Syria in terms of per capita. India can ill-afford a neighbor which fails to check Islamic radicalization.
8. India and Maldives share ethnic, linguistic, cultural, religious and commercial links. India was among the first to recognize Maldives after its independence in 1965 and later established its mission at Malé in 1972.
9. There are 25,000 Indian nationals living in Maldives (second largest expatriate community). Indian tourists also account for close to 6% of tourists Maldives receives every year.
10. India is also preferred destination for Maldivians for education, medical treatment, recreation and business. According to MEA, more and more Maldivians are seeking long term visa for pursuing higher studies/medical treatment in India.

red flag on the increasing use of artificial intelligence by governments for censorship and spread of disinformation.

The report, the 13th edition of an annual study of human rights online, covers developments between June 2022 and May 2023.

It evaluates Internet freedom in 70 countries. As per the report, the sharpest rise in digital repression was witnessed in Iran, where authorities shut down Internet service, blocked WhatsApp and Instagram, and increased surveillance in a bid to quell anti-government protests.

China, for the ninth straight year, was ranked as the world's worst environment for Internet freedom, with Myanmar the world's second most repressive for online freedom.

People faced legal repercussions for expressing themselves online in a record 55 countries this year, and the number of countries where authorities carry out widespread

arrests and impose multi-year prison terms for online activity has risen sharply over the past decade, from 18 in 2014 to 31 in 2023.

The report also detailed how elections were a trigger for digital repression.

Ahead of election periods, "many incumbent leaders criminalised broad categories of speech, blocked access to independent news sites, and imposed other controls over the flow of information to sway balloting in their favor," the report noted.

The Hindu

City of Homs

In the central Syrian city of Homs, "armed terrorist organisation" targeted "the graduation ceremony for officers of the military academy"





The Hindu

Sikkim floods



Himalayan glacial lake flooding

Heavy rainfall in India's state of Sikkim caused the glacial Lhonak lake to overflow, spurring catastrophic flooding in the region on Wednesday, officials said.

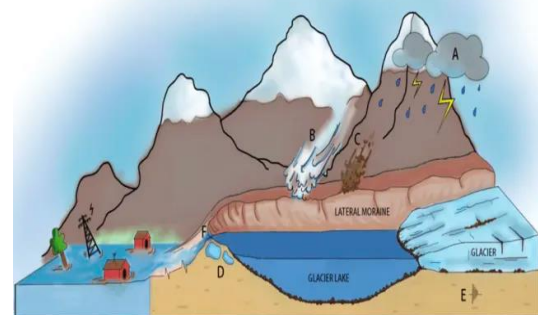


Figure-1: Illustrative graphic showing various reasons for GLOF occurrence (A) Cloudburst (B) Snow avalanche (C) Landslide (D) Melting of ice in moraine (E) Earthquake (F) Overflow

The lake outburst occurred in Lhonak lake in North Sikkim, resulting in a sudden and alarming rise in the water level of the Teesta River.

Glacial lakes are formed by melting glaciers and sudden discharge of large volumes of water and debris from them is termed glacial lake outburst flood or GLOF.

The inventory of glacial lakes in Sikkim Himalaya, prepared using temporal satellite data, shows the presence of 320 glacial lakes.

The situation in Sikkim has escalated further with damage to the Chungthang dam, causing a sudden overflow and a significant rise in water levels in the Teesta River.

Apart from the dams, numerous pharmaceutical companies and rampant unnecessary road widening, smart city projects and congested urban planning are putting more pressure on the ecology, he added.

“It is leading us to nowhere but environmental disasters.”

According to satellite mapping studies, 21 glacial lakes in Sikkim, including Gurudongmar lake and Kangchung lake, have the potential

to cause dangerous outburst floods in the region.

Glaciers in the Himalayan region are considered as the freshwater tower of South and East Asia and are strongly affected by the ongoing climate change.

However, Glacier retreat and mass loss have resulted in a rapid increase of unstable glacial lakes.

The Hindu

NDMA guidelines

Identify and Mapping Dangerous Lakes. Potentially dangerous lakes are often identified. This identification are going to be supported by field observations, past events, geomorphologic and geotechnical characteristics, etc.

Use of Technology:

It is recommended to utilize the Synthetic-Aperture Radar imagery. It will automatically detect changes in water bodies, including new lake

formations, during the monsoon months.

Structural Measures:

It recommends reducing the number of water with various methods to manage lakes structurally.

Methods are pumping or syphoning out water and making a tunnel through the moraine barrier or under an ice dam.

Land Use Planning:

In downstream areas, Infrastructure development should be monitored before, during, and after the construction.

Empowered Local Manpower:

Early Warning System:

Emergency response team

The Hindu
