ENVIRONMENTAL SUSTAINABILITY

CLAIRE FONTAINE®

NanoKriti

Invented at IIT

TECHNOLOGY BUSINESS INCUBATOR FOUNDATION IIT ROPAR

10 +YEARS OF RESEARCH **20 +PAPERS**

Nanobubble Advanced Technology Swimming Pool

"A smarter, safer, and more sustainable approach to pool water treatment."

Skin Pore Cleansing Like a Spa

Introduction

Pool water requires continuous disinfection to maintain hygiene and safety. Conventional methods like chlorine and UV often lead to chemical residues, inconsistent performance, and user discomfort.

What are **Nanobubbles?**

Nanobubbles are tiny gas-filled cavities <200 nm in diameter.
They exhibit unique physical and chemical properties due to their small size.

Unique **properties:**

- High Surface Area-to-Volume Ratio
- Neutral Buoyancy
- Extended Lifetime
- Efficient Gas Exchange
- Non-Toxic and Eco-Friendly
- Stable

Larger Bubbles
Larger Bubbles rise to the surface and burst

Nano Bubbles
Nanobubbles are stable, neutrally buoyant, remain suspended & disperse in water

Efficient gas-liquid transfer

Due to their tiny size and high surface-to- volume ratio, nanobubbles are very efficient in gas-liquid mass transfer.

Don't rise up and burst

Nanobubbles are neutrally boyant, which means that they don't rise up to the surface and escape and hence are stable.

Disease Control & Pathogen Reduction

Ozone nanobubbles act as a natural disinfectant, killing harmful bacteria, viruses, and parasites in water without using chemicals.

Special Properties

1000x Smaller

Hydrophobic

Don't rise up & burst

1000x Smaller than microbubbles

Nanobubbles are 1000 times smaller than microbubbles, thus exhibits unique properties.

Improves Dissolved Oxygen levels (DO)

Nanobubbles dissolve gases more efficiently, stay in water for days, ensuring oxygen is available even at the bottom, eventually helping fish and shrimp grow faster.

Million Times Surface Area

Traps Dirt and Grease

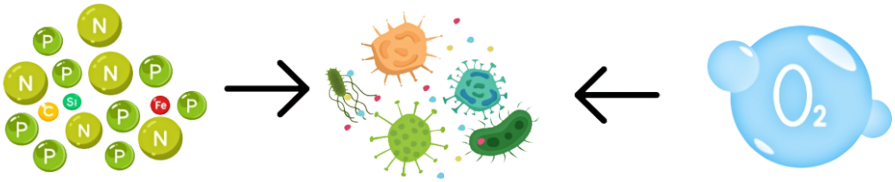
Improves Dissolved Oxygen levels (DO)

Large Surface area-to-Volume ratio

Nanobubbles have a high surface area- to-volume ratio, resulting in more surface available for gas exchange and a higher gas-liquid mass transfer.

How Nanobubbles **Treat Swimming Pool Water?**

When algae consume these, they grow rapidly and cover the water surface.



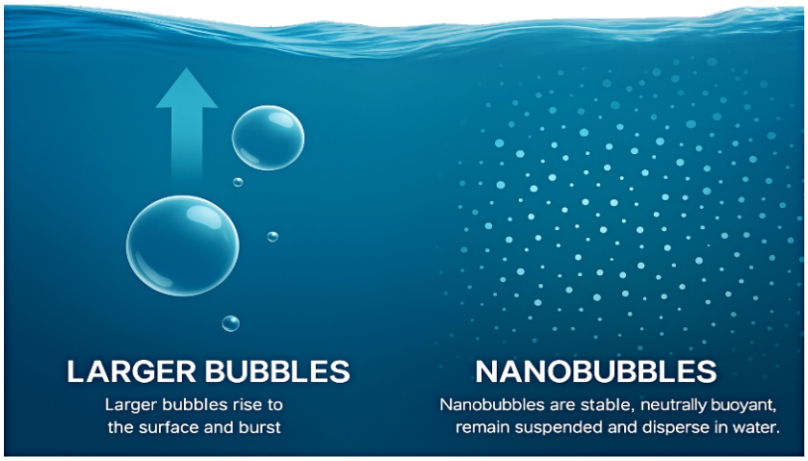
Fortunately, natural microorganisms also consume these nutrients, keeping algae under control. But they need oxygen to survive.

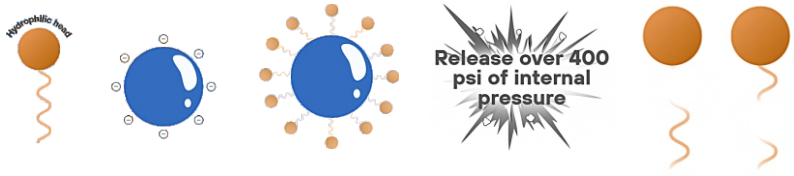
The real problem: lack of oxygen.

Nanobubbles are 1,000 times smaller than normal bubbles, don't rise or burst, and carry a natural surface charge. This makes them highly stable and efficient in oxygen transfer.

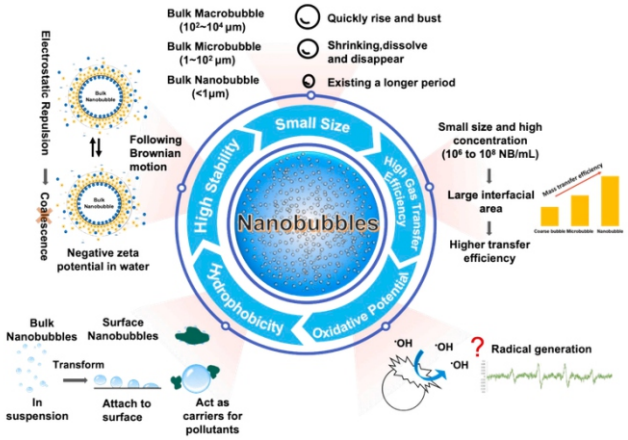
Nanobubbles deliver oxygen deep into the water, keeping microorganisms alive, breaking down waste naturally, and preventing algae growth.

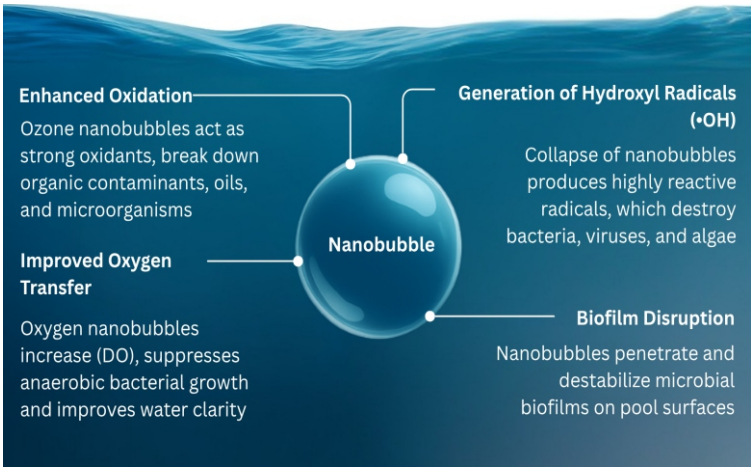
This restores balance, removes foul odor, and brings life back to the pond.





Technicalities





Overall, the process combines enhanced oxidation, reactive species generation, improved oxygen transfer, and physical cleaning effects to provide continuous disinfection without leaving harmful chemical residues, making it a more stable and efficient approach for maintaining pool water quality.

Comparison With Conventional Methods

Nanobubble technology offers a more balanced and efficient approach to pool disinfection compared to traditional systems. It ensures continuous treatment with minimal chemical residue, lower maintenance, and improved user safety and comfort.

Parameter	Chlorine	UV	Nanobubbles
Chemical residue	High	None	None
Continuous disinfection	Yes	No	Yes
By-products	Harmful (THMs)	None	None
Maintenance	Moderate	High	Minimal
Skin / eye irritation	High	Low	None

Advantages

- Safer for skin & eyes
- No harmful by-products
- Odor-free water
- Continuous disinfection
- Energy efficient
- Improved clarity
- Low maintenance
- Reduced chemical usage

Applications

Public swimming pools

Residential pools

Competitive / Olympic pools

Hotel & resort pools

Therapy pools

Water Parks

Configuration

CLAIRE FONTAINE® NanoKriti nanobubble generators are built to fit into existing swimming pool systems without major changes. They can be installed directly in the recirculation line, making them essentially plug-and- play.

Water is drawn into the unit, nanobubbles are generated inside the chamber, and the treated water is sent back to the pool, ensuring continuous circulation and uniform treatment.

The system can work with different gases, such as oxygen or ozone, depending on whether the focus is on general water conditioning or stronger disinfection.

Our Products

Customized for different capacities

ENVIRONMENTAL SUSTAINABILITY

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