APPLICATIONS

High efficiency low resistance antibacterial nanofiber water treatment filter (special for microplastic and soluble contaminant filtration) can be used in different water treatment system, especially in high-value scenarios such as removing microplastics from drinking water and antibiotics from medical wastewater.

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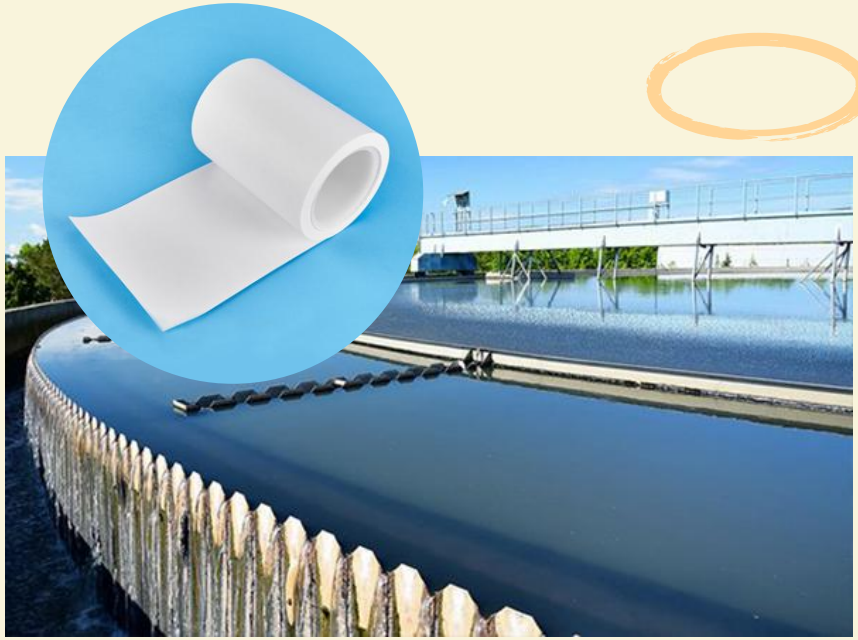
Researched, Designed & Manufactured in Hong Kong

R&D at Hong Kong Science & Technology Park and Production at its Advanced Manufacturing Centre

POWERED BY NASK NANO®

INVISIBLE TO INVINCIBLE

NONWOVEN WATER TREATMENT



SPECIAL FOR MICROPLASTIC AND SOLUBLE CONTAMINANT FILTRATION

TNCA-22

KEY FUNCTIONS & BENEFITS

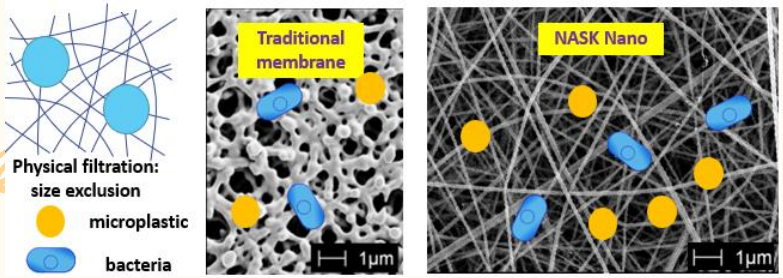
LOW RESISTANCE AND HIGH FLOW RATE

Compared to traditional membrane materials, it is estimated to reduce energy consumption by 30–50%.

SYNERGISTIC EFFECT

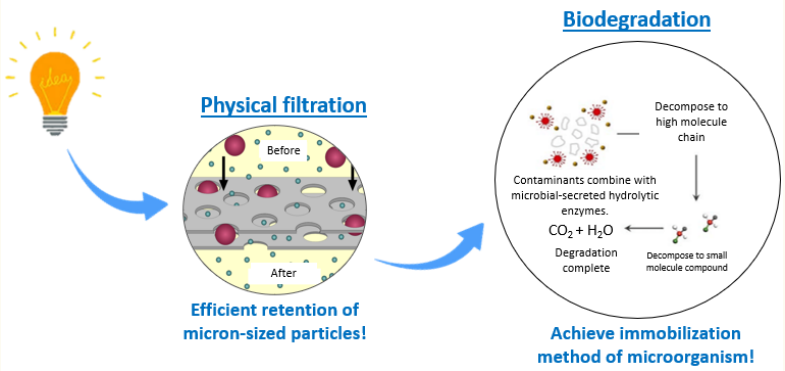
First filter out particulate matter, then degrade dissolved pollutant. This combined application of "physical filtration and biodegradation" overcomes water pollution challenges that conventional technologies struggle to address effectively.

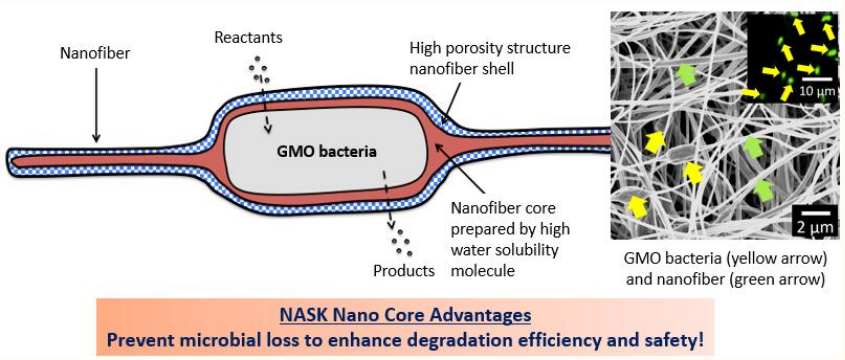
Criteria	Traditional Membrane	NASK Nano	Advantages and Disadvantages Analysis
Pore size range	0.1 – 10 μm	0.1 – 1 μm	• NASK Nano: Efficiently retains micron-sized particles, and even some viruses (by further reducing pore size through surface modification). • Traditional membrane: Multiple layers are required to achieve similar precision, resulting in increased membrane thickness and reduced flux.
Porosity	30 – 50%	80% above	• NASK Nano: Features high porosity and a three-dimensional interconnected pore network, resulting in low water flow resistance. • Traditional membrane: Relies on a dense structure to achieve small pore size, resulting in high water flow resistance.
Operation Pressure	1.0 – 3.0 bar	0.1 – 0.5 bar	• NASK Nano: High flux can be achieved even under low pressure (0.1–0.5 bar)—for example, at 0.2 bar, the flux can reach twice that of conventional membranes—with an estimated 30–50% reduction in energy consumption. • Traditional membrane: Requires higher driving pressure (e.g. 1.0–3.0 bar), resulting in high pumping energy consumption.
Contamination Resistance	Low	High	• NASK Nano: Hydrophilic treatment can reduce organic matter adsorption, and during long-term operation, the fouling rate is estimated to be 40% lower than that of conventional membranes. • Traditional membrane: Surface modification is challenging and may compromise mechanical strength.
Cleaning energy consumption	High	Low	• NASK Nano: The surface is smooth and antibacterial, making it difficult for contaminants to adhere, thereby reducing the frequency of backwashing and the use of chemical cleaning agents. • Traditional membrane: Prone to forming irreversible fouling (e.g. organic contaminants seeping into membrane pores), requiring frequent chemical cleaning, which increases energy consumption and shortens membrane lifespan.
Stability	Low	High	• NASK Nano: Flux remains stable over the long term. • Traditional membrane: Flux decreases rapidly with fouling.
Sustainability	Low	High	• NASK Nano: biodegradable, environmentally friendly • Traditional membrane: Uses petroleum-based membrane materials, which harm the environment.

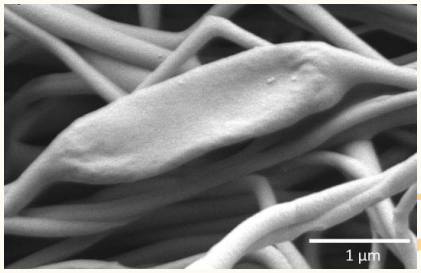


ADVANCED TECHNOLOGY

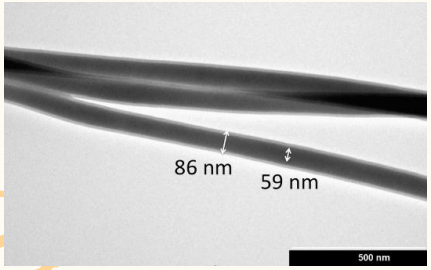
NASK NANO IMMOBILIZATION METHOD OF MICROORGANISM







Nanofiber carrying genetically modified bacteria



Nanofiber with special core shell structure