

# 納米燈觸媒殺菌除甲醛塗層

新盈環保科技有限公司  
Sunlight Eco-tech Limited

新盈是一所為客戶提供納米科技以及環保技術的公司。我們研發總部位於香港科學園，在觀塘，元朗，廣州均設有生產基地。我們的業務包括納米技術，如納米燈觸媒塗層、納米自清潔塗層；太陽能發電系統；太陽能電動車等。

公司是由三位對綠色科技經驗豐富的專業人士創立。他們對能源解決方案的開發和製造有多年豐富經驗。

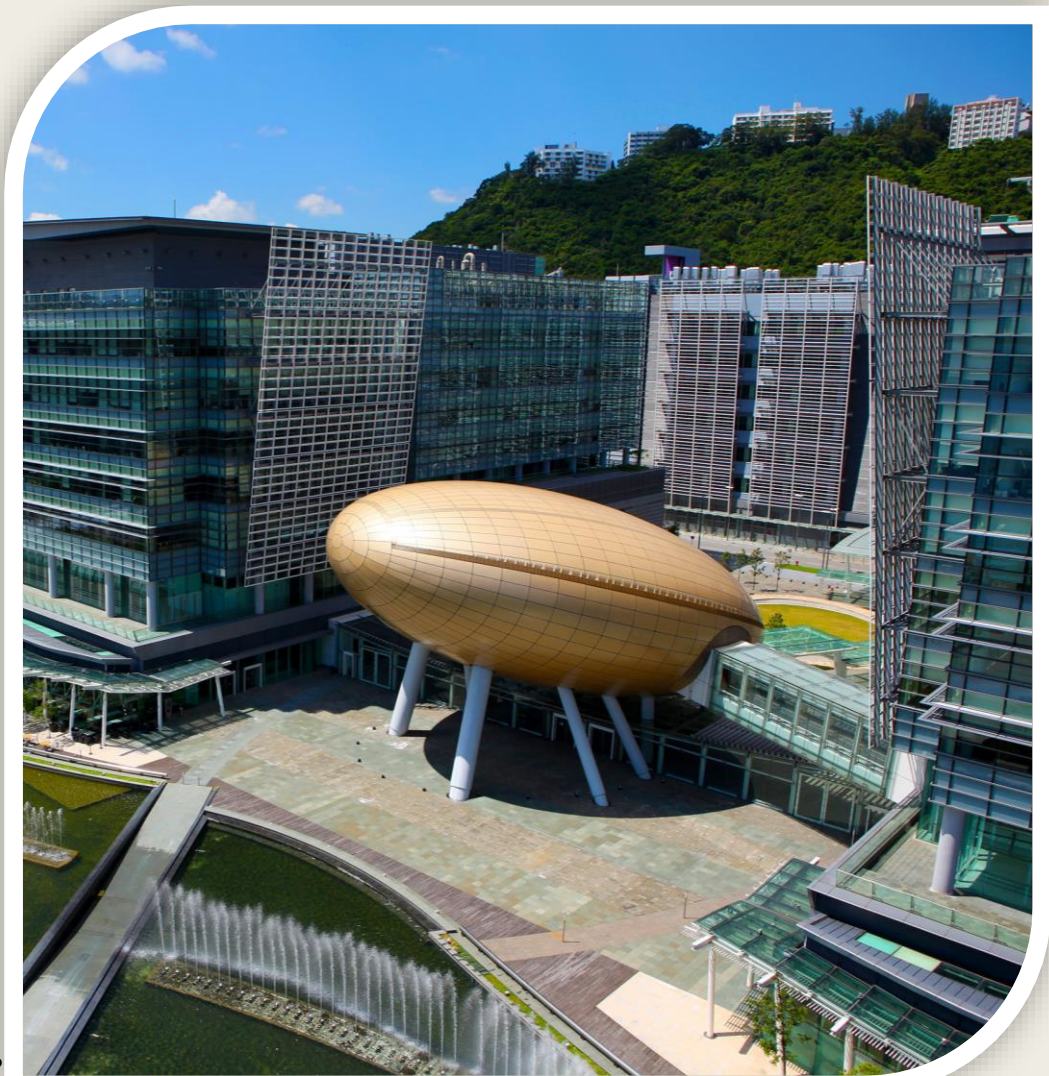
## 我們的願景

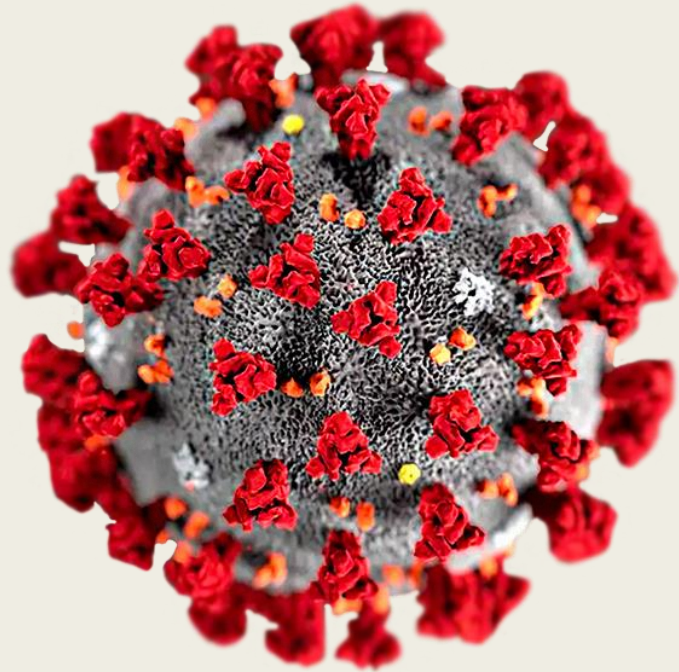
研發有利於世界的綠色科技，解決環境問題的同時賺取最大的利潤。

## 我們的目標

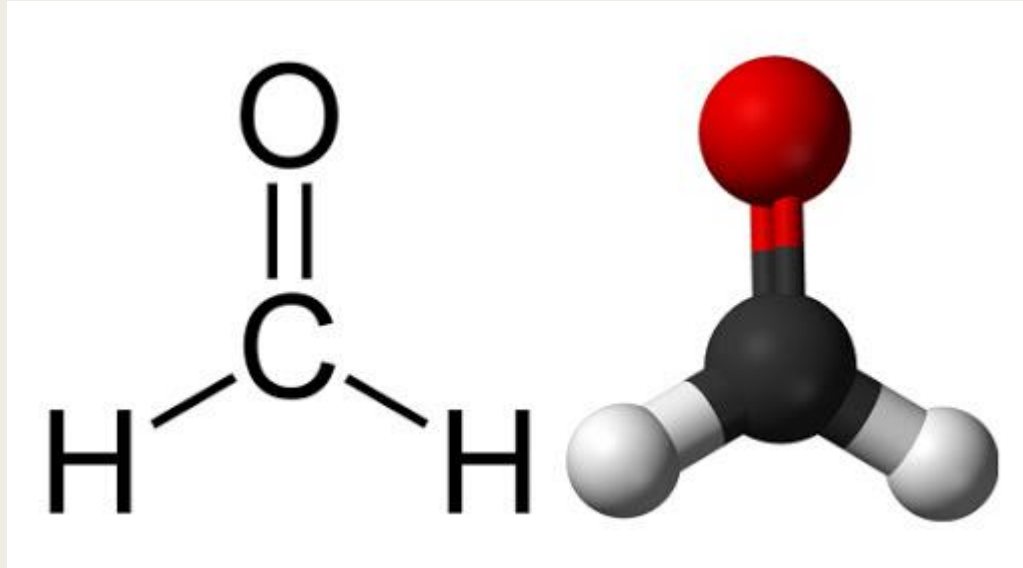
以最少的變成最多。

在不增加成本的同時，提升能源效率；用最少的資源、並對環境造成最少的破壞，換取更多、更有效的能源供應。





在空氣中含有大量細菌及病毒，尤其在目前COVID-19疫情期間，空氣中存在很多潛在的威脅。因此需要一種長效的滅菌措施預防可能的病毒傳播。燈觸媒就是一種有效的方法。燈觸媒可以有效破壞冠狀病毒蛋白質包膜，進而滅活冠狀病毒，並對100種細菌的殺滅率超過99.99%。



甲醛對人體危害主要集中在對眼、鼻、喉的刺激，亦有可能造成嚴重的哮喘。對於嬰幼兒，或某些特定的人群，甲醛非常容易引發癌症。

燈觸媒不止可以殺滅細菌或者病毒，亦可以分解空氣中的甲醛及有毒有害的揮發性氣體

# 納米燈觸媒殺菌除甲醛塗層

污染物	GB/T 18883 (mg/m <sup>3</sup> )	NIOSH (ppm)	OEHHA (µg/m <sup>3</sup> )	US EPA RfC (mg/m <sup>3</sup> )	文献 <sup>[183]</sup> (mg/m <sup>3</sup> )	US EPA 致癌分类	IARC 致癌分类	单位转换 (1ppm=?mg/m <sup>3</sup> )
Formaldehyde	0.10	0.016	3	-	0.04	B1: probable human carcinogen	Group 2A: The agent is probably carcinogenic to humans	1.23

注:

NIOSH: The National Institute for Occupational Safety and Health, U.S.

U.S. EPA: U.S. Environmental Protection Agency

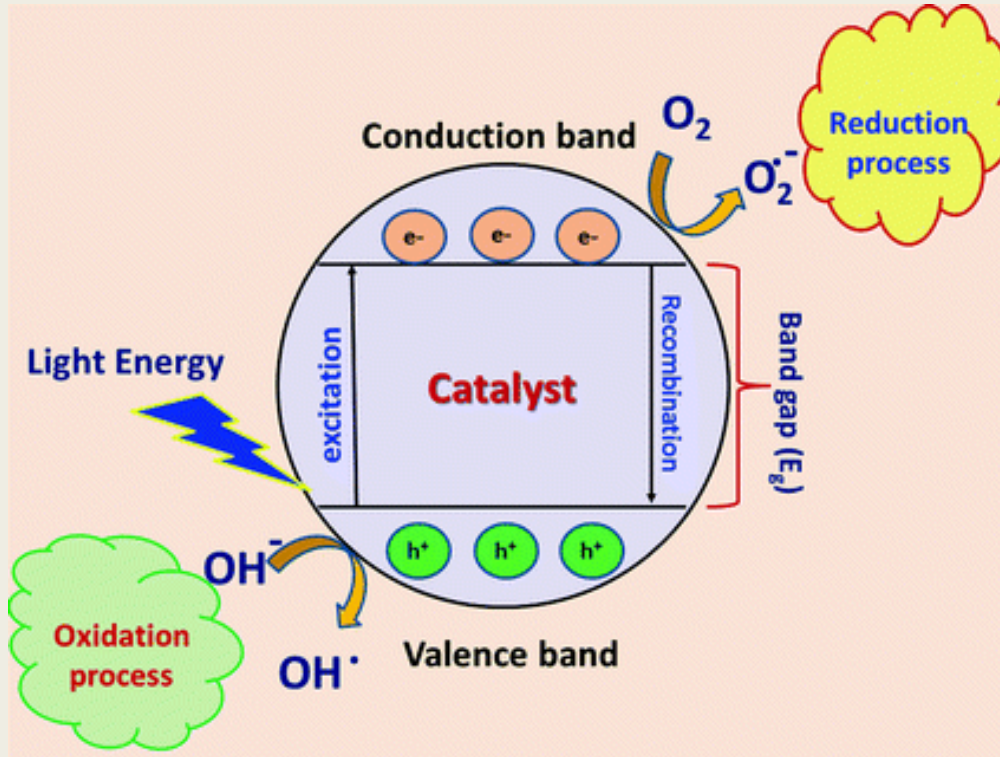
OEHHA: Office of Environmental Health Hazards Assessments, California Environmental Protection Agency, U.S.

RfC: Reference Concentration for Chronic Inhalation Exposure

IARC: International Agency for Research on Cancer, World Health Organization

美國NIOSH（國家職業安全衛生研究所）規定室內: 0.1 mg/m<sup>3</sup> (0.0813 ppm)

# 納米燈觸媒殺菌除甲醛塗層



燈觸媒的主要原材料是納米TiO<sub>2</sub>，在可見光激發下，激發空氣中的氧氣及水分子，變成超氧離子及氫氧自由基。這兩種基團具有強氧化性，可分解甲醛及有害細菌及病毒



與香港理工大學合作研發相關產品

# 納米燈觸媒殺菌除甲醛塗層



本公司的納米TiO<sub>2</sub>選用水為分散溶劑，對環境無污染，對人體無害。並且粒徑只有3nm，是頭髮絲直徑的百萬分之一左右。



市售的TiO<sub>2</sub>需要紫外光激發，採用有機溶劑，對環境及人體均有刺激，並且粒徑在微米尺度，容易團聚沉澱。

# 納米燈觸媒殺菌除甲醛塗層



施工方法：噴槍+空壓機



零售版家庭裝



# 納米燈觸媒殺菌除甲醛塗層



納米燈觸媒殺菌除甲醛塗層以納米TiO<sub>2</sub>為主要原材料，對人體無毒無害。另外，作為一種催化劑，在分解甲醛、殺滅病菌的同時，不會消耗自身，可保持長久有效。

# 納米燈觸媒殺菌除甲醛塗層

**Test Report** Report No.: GZAFN1809016874P001 Date: Oct 26 2018

**TEST METHOD(S):**  
Acute inhalation toxicity test\*  
Test method(s): With reference to GB/T 21605-2008  
Test environment: SPF animals house, certificate No. SYXK 2018-0086, Guangdong. Room temperature 22±1°C, Relative humidity 60±5%.  
Experimental animals and feed: 20 Healthy SPF Kunming mice were randomly selected, in half respectively male and female, weighing 18.0- 20.0 g. Animals and feed were supplied by Guangdong Medical Experiment Animal Center, certificate No. SCXK 2013-0002, Guangdong. Animal certificate No. 44007200055429.  
Preparation of Sample: Took the sample directly as test substances.  
Exposure concentrations of Sample: Limite test exposure concentrations was 10000 mg/m<sup>3</sup> for 4 h.  
Test procedure:  
(1) Exposure equipment: A dynamic inhalation equipment was used, type HOPE-MED 8050. The duration of exposure was 4 h after equilibration of the chamber.  
(2) Exposure condition: Chamber vol. 0.3 m<sup>3</sup>, airflow rates: 3.6 m<sup>3</sup>/h, totalled 14.7 m<sup>3</sup>. The temperature: 20±1°C, the relative humidity:55-85%, oxygen concentrations: 20±0.5%. The sample relative density: 982 mg/mL. Fasted during exposure, water also was withheld. After exposure, ordinary diet.  
(3) Observation: Experimental observation were lasted for 14 days. Recorded signs of toxicity and death of animals every day, individual weights of animals in weekly intervals. At the end of the test surviving animals were weighed and then humanely killed, record necropsy findings. Calculated LC<sub>50</sub>.

**TEST RESULT(S):**  
Acute inhalation toxicity test\*  
After exposure 14 days, no obvious toxic signs and death were observed. No obvious change were observed in gross necropsy. The 4 h LC<sub>50</sub> was more than 10000 mg/m<sup>3</sup>. Animals body weight changes and response data and dose level, see table 1.

**Table 1 After exposure, tabulation of body weight changes, response data and dose level for animals**

sex	Dose (mg/m <sup>3</sup> )	Test animals(n)	Body Weight ( $\bar{X} \pm SD$ ) (g)			Death animals(n)	Mortality (%)
			0 d	7 d	14 d		
Female	10000	10	18.63±0.33	27.92±0.77	32.68±1.74	0	0
Male	10000	10	18.80±0.40	29.93±0.93	36.79±2.21	0	0

Remark: \*Test was carried out by external laboratory assessed as competent.

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吸入無毒性測試

MA 201819000583 CNAS 中国认可 国际互认 检测 TESTING CNAS L1747

广东省微生物分析检测中心  
GUANGDONG DETECTION CENTER OF MICROBIOLOGY  
分析检测结果  
ANALYSIS AND TEST RESULT

报告编号 (Report No.): 2020FM25059R01D

测试污染物 Test pollutants	作用时间 Action time	检测结果 Result		去除率 Removal rate (%)
		空白试验舱浓度值 Concentration at 24h in blank control cabin (mg/m <sup>3</sup> )	样品试验舱浓度值 Concentration at 24h in test cabin (mg/m <sup>3</sup> )	
甲醛 Formaldehyde	24h	1.10	0.048	95.6
氨 Ammonia	24h	2.15	0.105	95.1
苯 Benzene	24h	0.817	0.070	91.4
TVOC	24h	4.76	0.142	97.0

(以下空白 Blank below)

备注  
Remarks

将 100mL 样品均匀喷涂在 3m<sup>2</sup> 基纸上, 自然晾干后放入 1.5m<sup>3</sup> 试验舱内, 并开启 30W 日光灯光照进行试验。  
Spray 100mL samples evenly on 3m<sup>2</sup> base paper, dry them naturally and put them into the 1.5m<sup>3</sup> test chamber, and turn on 30W fluorescent lamp for testing.

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甲醛分解測試

Date : 2020-09-17  
No. : HC20090435

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**Method(s) Used:**  
ASTM E2315-2016 (contact time : 2 minutes)

**Test Result(s):**  
Antimicrobial Effectiveness against

Test Trial	消毒殺菌液	
	Escherichia coli 大腸桿菌 (ATCC 25922)	Staphylococcus aureus 金黄色葡萄球菌 (ATCC 6538)
Average of controls (CFU/ml)	855,000	410,000
Average of samples (CFU/ml)	18	15
<b>Bacteria Reduction Rate</b>	>99.99%	>99.99%

Notes: - CFU/ml denotes Colony Forming Unit per milliliter  
-> denotes larger than  
- Bacteria Reduction Rate = (Average of controls - Average of samples) x 100 / Average of controls

\*\*\*\*\* End of Test Report \*\*\*\*\*

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殺菌測試

# 納米燈觸媒殺菌除甲醛塗層

微生物相對含量檢測儀器



# 納米燈觸媒殺菌除甲醛塗層

	噴塗前	噴塗 3 小時後
客廳		
主臥		
次臥		

新裝修單位噴塗燈觸媒之前與噴塗三個小時之後的  
甲醛含量測試。

	噴塗前	噴塗十秒後
微生物 相對讀 數		

在汽車內噴塗燈觸媒之前與之後的細  
菌含量測試。

# 我們的客戶



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