

**[OXYGEN-SENSING SMART LABEL/
XIAMEN UNIVERSITY AND FUJIAN RESEARCH INSTITUTE OF METRIC SCIENCE]**

TITLE	Chinese research teams develop oxygen-reactive smart labels		
COMPANY / ORGANIZATION		  厦门大学 XIAMEN UNIVERSITY	
KEYWORDS	Food, monitoring, sensors, anti-counterfeiting, nano		
INDUSTRY AREA(S) AFFECTED	Food warehousing / storage Finished goods transportation Point of purchase – Retail or Food Service		
ISSUE ADDRESSED	Food counterfeiting and tampering is a widespread problem, particularly in regions such as China. Activities such as this can pose a severe health threat, as counterfeit/tampered food may contain toxic additives or substitutes, while also compromising the image of the brands they imitate.		
SOLUTION	<p>Chinese research teams from the Xiamen University and Fujian Research Institute have developed low-cost, environmentally-friendly oxygen-reactive smart labels that can be used to detect counterfeit or tampered food. The smart labels make use of honeycomb-like nanospheres made from a commercially-available polymer that change colour when exposed to oxygen.</p> <p>Many types of food, including meats, potato chips, fruits, dry-foods, and are kept in vacuums, or their packaging is filled with inert gases such as carbon dioxide or nitrogen to preserve freshness and prolong shelf-life. The oxygen-sensing nanoparticles integrated in smart labels can be used to detect oxygen within packaging, which is an indicator of tampering or adulteration. Additionally, researchers suggest that they can be used to determine if a product is genuine or counterfeit.</p>		
EXPECTED BENEFITS	<p>Consumer-safety, brand protection & anti-counterfeiting:</p> <p>Many foods are kept in vacuums or inert gases to maintain freshness and extend shelf-life. The oxygen-sensing nanoparticles found within these smart labels can be used to detect compromised products, while also being able to identify counterfeits. If any compromise is detected, the packaging changes colour, making it easy for both distributors and consumers to determine whether a product is safe to consume or whether the product is counterfeit or genuine.</p>		
CASE LINK	<p>AIPIA, <i>Oxygen-sensing Label has Anti-Counterfeit Feature</i> http://www.aipia.info/news-Oxygen-sensing-Label-has-Anti-Counterfeit-Feature-587.php</p> <p>Securing Industry, <i>Oxygen-sensing marker has anti-counterfeit applications</i> https://www.securingindustry.com/food-and-beverage/oxygen-sensing-marker-has-anti-counterfeit-applications/s104/a2824/#.WABQL-ArKUk</p>		
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