

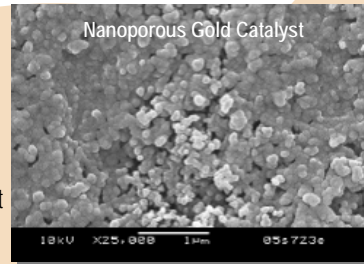


Postharvest Sensor

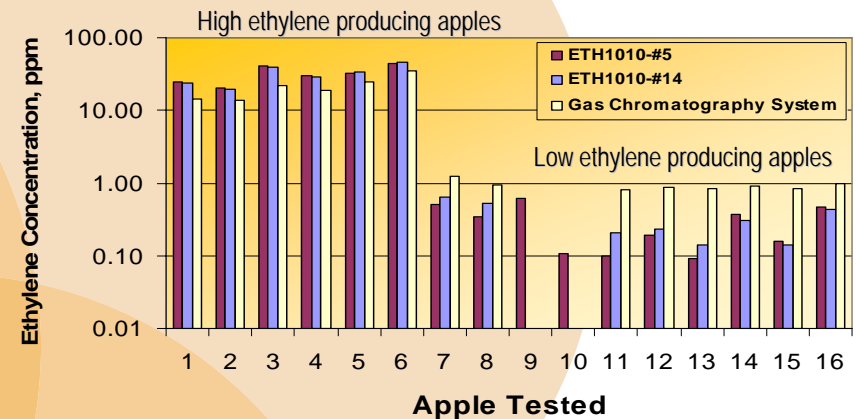


Technology Description:

- Innovation: *nanoporous* gold sensing element
- Use: Sensing and scrubbing of chemicals in air
- Sensing: Electrocatalytic signal converted to amount
- Scrubbing: Accelerated electrocatalytic oxidation
- More compact and lighter than Gas chromatography – good for field use
- Other relevant postharvest gases measured simultaneously
- *BETTER*: Very linear response from <0.01-ppm to >100-ppm
- *FASTER*: Real-time measurement with fast response
- *CHEAPER*: An order of magnitude cheaper than devices with similar capability



Proof and Validation:



Value Proposition:

- Ethylene is a hormone produced by plants, vegetables, flowers, and fruit
- Fruit, vegetables, and flowers show extreme sensitivity to presence of ethylene in air (to as low as 0.01-ppm) – ethylene accelerates ripening and decay
- Worldwide postharvest losses of perishable food currently between 30 and 40%
- Ethylene-related losses in post-harvest industry in the U.S. significantly greater than \$1B per year
- High quality production critical to U.S. agricultural industry competitiveness facing growing worldwide competition, especially from China
- Value proposition: Detect-to-prevent and detect-to-treat
- *Impact in Apple and Pear Industry: Higher quality fruit to market, when needed*
- Beneficiaries of ethylene sensing technology: horticultural and floriculture research institutions, growers, *packing houses, cold-storage facilities, and greenhouses*

Status:

- Alpha and beta prototypes available for research applications
- Low cost, commercial postharvest gas sensor *product launch in 2007*
- Patented scrubber approach under development (US Army SBIR funding)
- Sensor and scrubber (complete ethylene management system) product launch in 2009

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