

SNIFFER SYSTEMS

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THE PROBLEM

Current chemical sensing technologies cannot emulate the sensitivity of the dog's nose



- There is increasing demand for detection of volatile chemicals: terrorist threats, border control, healthcare, environment.
- Current screening technologies are limited in sensitivity, selectivity and stability
- Screening systems for security applications miss many potential threats so there is increased risk, cost and potential consequences.

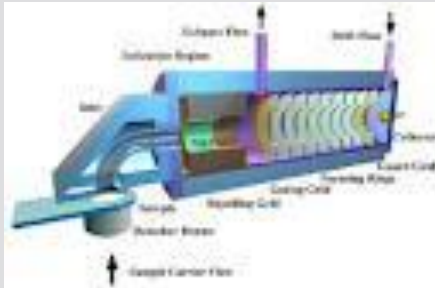




STATE-OF-THE-ART



Ion mobility spectroscopy



IONSCAN 500DT(Smith Detection)



- Very good for high electrons (explosives...) and protons (drugs...) affinity compounds
- Sensitivity levels incredibly high

- Swabbing needed
- Radioactive ionization:



- subject to regulation: operation by trained staff in authorized environments



C-BORD TASK





TARGETS AND APPROACH

- Contraband eg tobacco
- Drugs eg cocaine, heroin, drug precursors
- Explosives eg TNT, PETN etc

- PROBLEMS – generally low volatility, high background of other chemicals

APPROACH

- SENSOR ARRAYS OF DIFFERENT TECHNOLOGIES

- APPROPRIATE SAMPLING METHODS



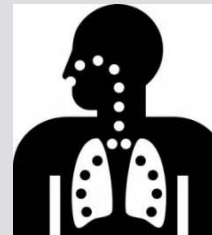
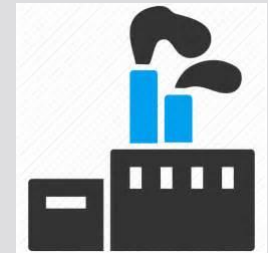
POTENTIAL USERS

■ Customs Authorities

■ Airport Authorities

■ Chemical and Process Industries
(Germany, France, Italy)

■ Medical Diagnostics
e.g. Lung Disease





KEY USER REQUIREMENTS

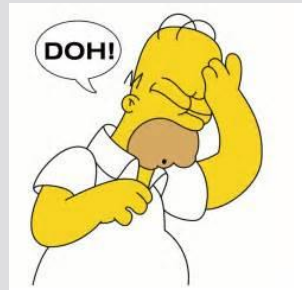
■ **RELIABILITY**



■ **ROBUSTNESS FOR FIELD USE**



■ **CAN BE OPERATED BY A NON EXPERT**





THE SOLUTION

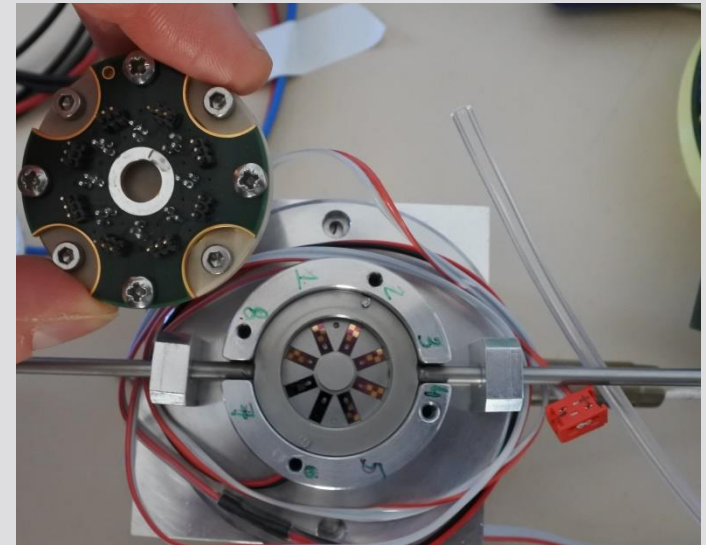
SENSOR ARRAYS BASED ON NEW TECHNOLOGY

❖ **New Technology based on an array of microcantilevers containing diamond nanoparticles and organic polymers.**

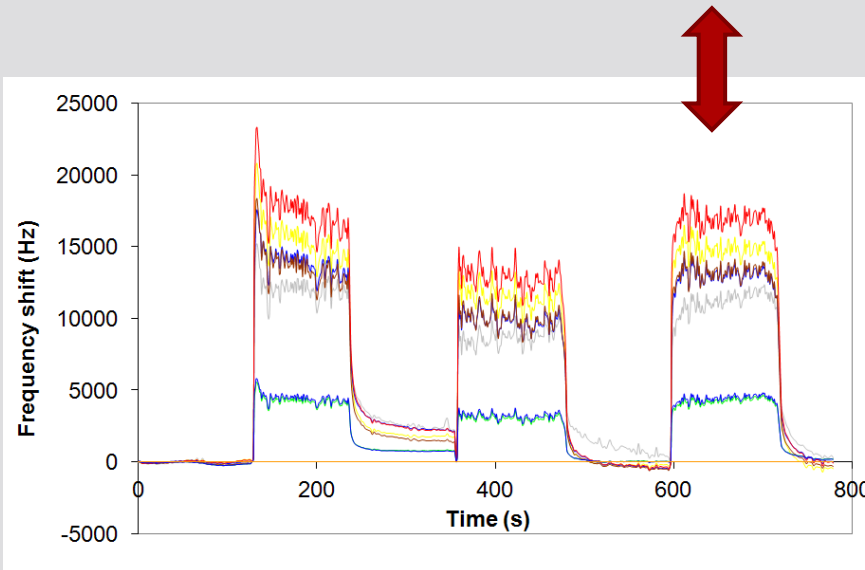
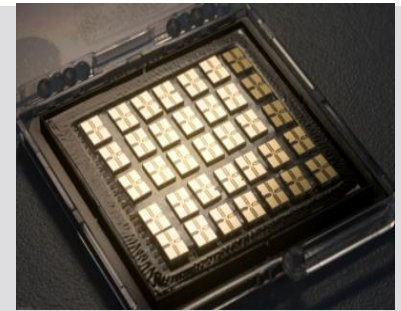
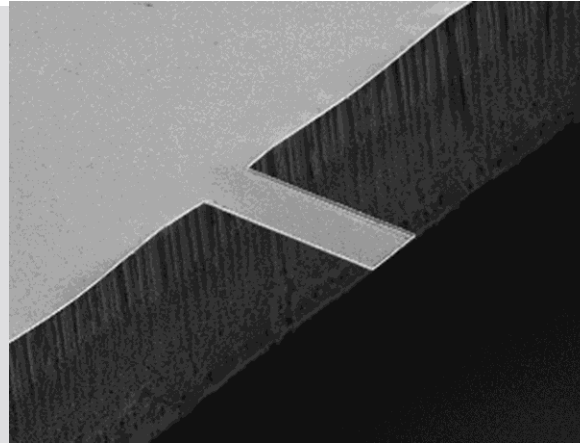
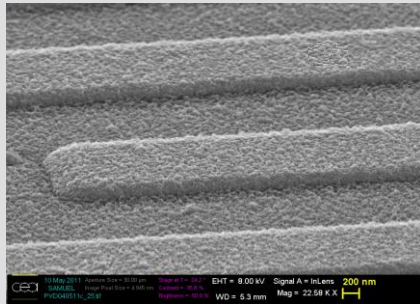
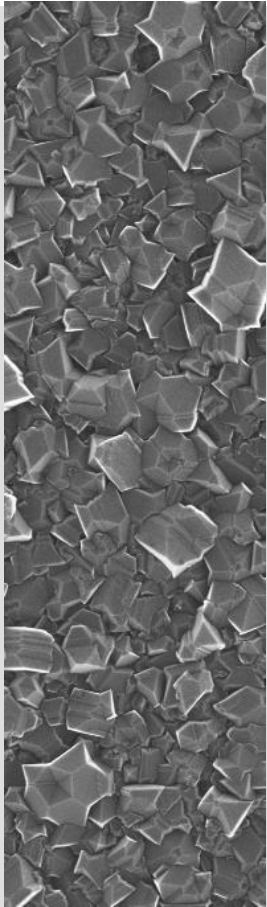
- ❖ A method of sampling low volatility compounds
- ❖ Electronics and pattern recognition
- ❖ Software

- High Sensitivity
- High Selectivity
- High Stability

- Generic platform – many applications
- Robust instrument for field use

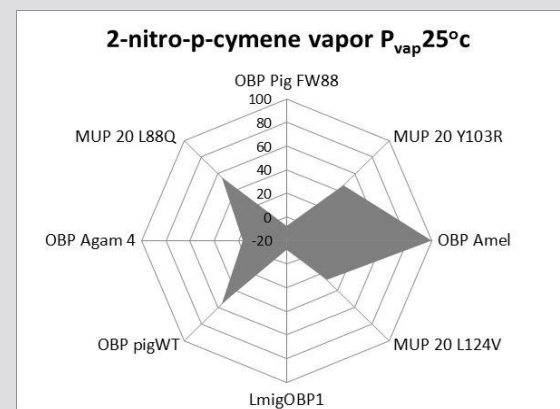
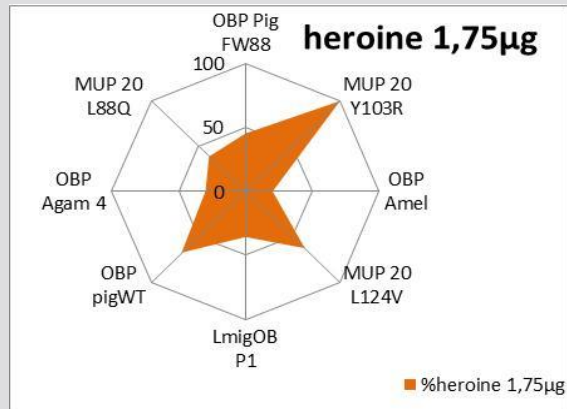
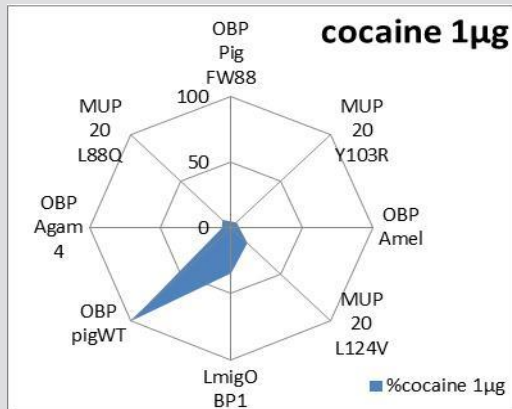
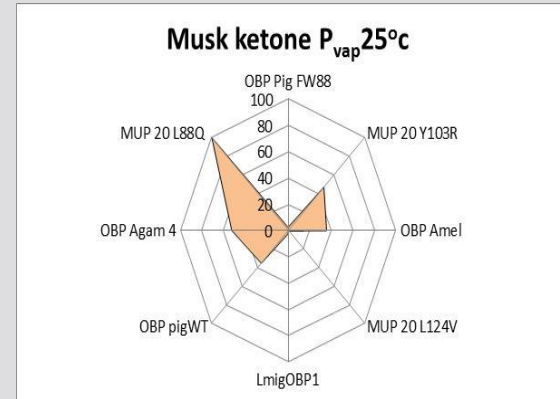
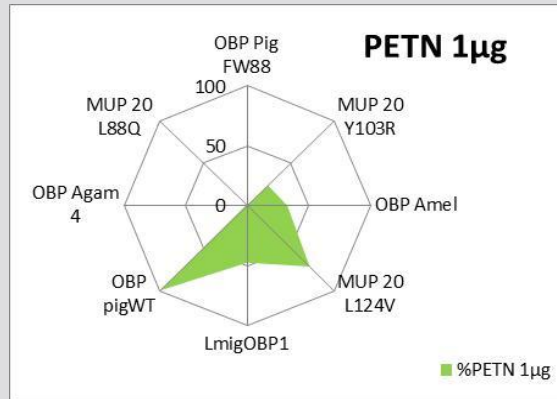
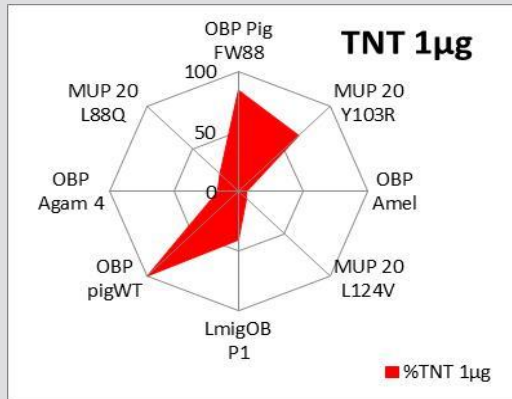


ARRAYS OF CANTILEVER SENSORS



- Ultrasensitive Micro-balances
- Based on synthetic diamond technology

SELECTIVITY/PATTERN RECOGNITION





UNIQUE ACHIEVEMENT

- Patented technology
- “Know How” from an integrated multidisciplinary team working together for several years
- It would require at least **15** person years to emulate this achievement



THANK YOU



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