FGV | Cambridge Nanosystems

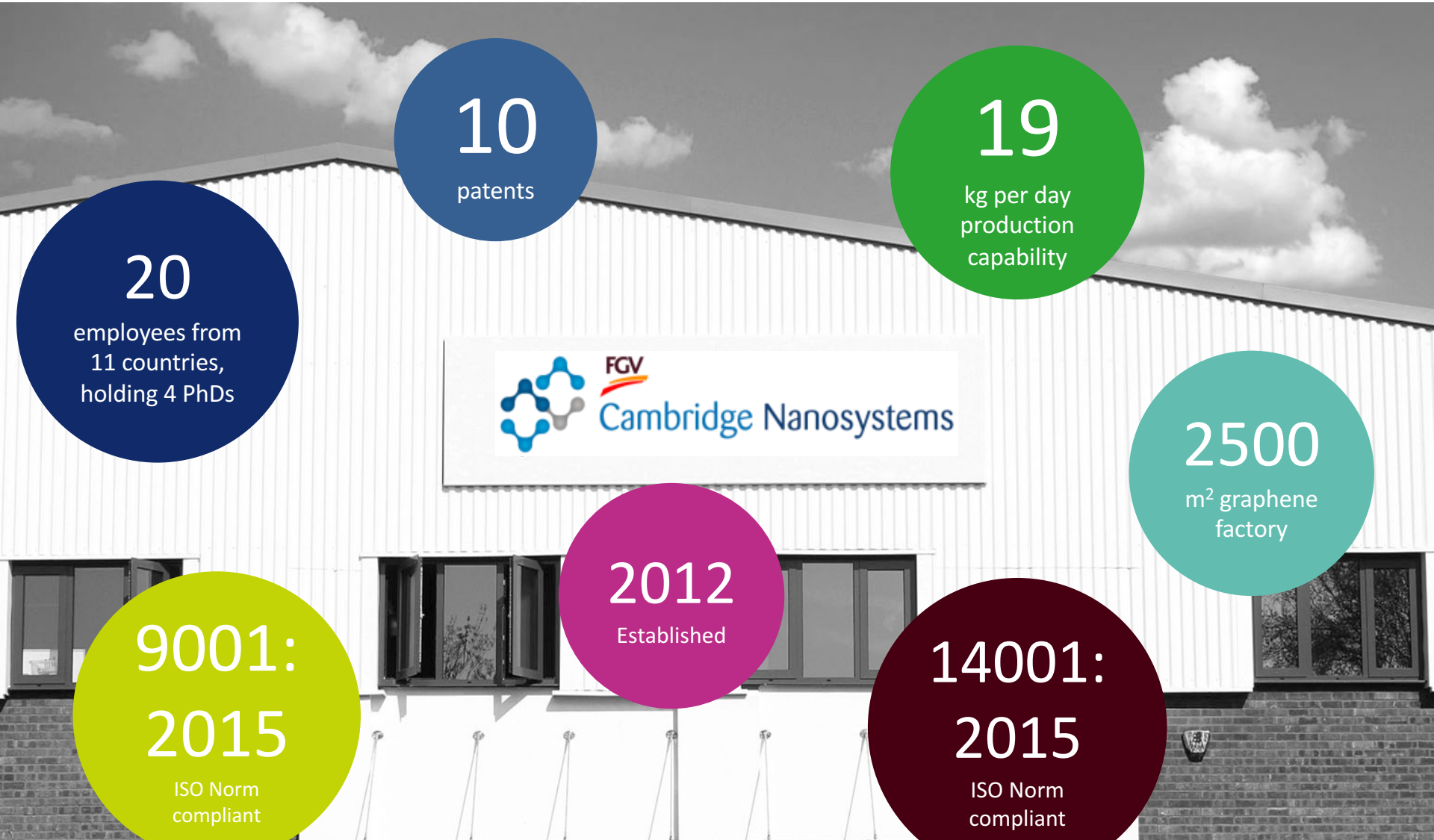
15TH ANNIVERSARY **HVM**
4TH **GRAPHENE NEW MATERIALS**
CONFERENCE SUMMIT & SHOWCASE
2-3 NOVEMBER 2017 CAMBRIDGE UK

www.cir-strategy.com/events

LEADING THE GRAPHENE REVOLUTION

CAMBRIDGE NANOSYSTEMS LTD

IN NUMBERS



CNS IN THE GRAPHENE VALUE CHAIN

Large scale supply

Graphene Supply

- Graphene powder

Prototype scale internally or with partner for large scale

Graphene Blends

- Graphene dispersions
- Graphene resin

Prototype scale or commercial scale with collaborators

Graphene Enabled Technology

- CFRP composites
- Heater modules
- Conductive ink
- Fire retardant coatings

B2B: OEMs

- Automotive
- Aerospace

B2C: Consumer products

- Heated flask*
- Art radiator*

**Prototype demonstrators*

Online Shop

GRAPHENE FLAKES: CAMGRAPH®

CNS supplies impurity-free graphene flakes on industrial scale.

- No additives or catalysts used in production.
- Metal and oxygen free product.
- Three standardised qualities determined by flake thickness.
- Available through online store*

*Email contact@cnanos.com for quotations on larger orders.

- Policies, processes and procedures are ISO 9001:2015 and ISO 14001:2015 compliant

THE BRITISH ASSESSMENT BUREAU ISO9001

THE BRITISH ASSESSMENT BUREAU ISO14001

Patented Technology
WO2012/147054 & WO2015/189643

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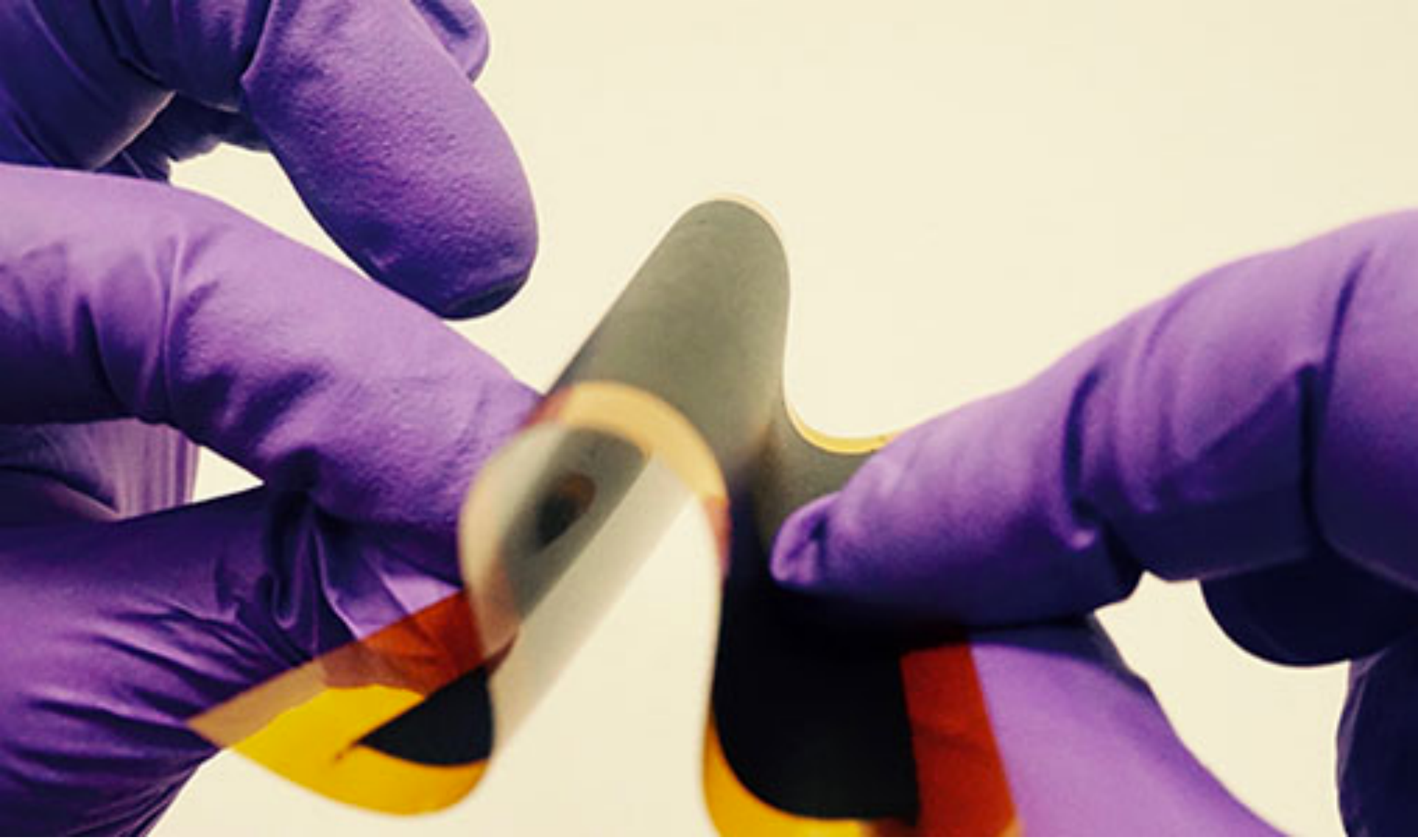
SELECTED CAMGRAPH® APPLICATIONS

- Sprayable, flexible, large-area **HEATERS**
- Conductive additive to Li-ion **BATTERIES**
- 3D, inkjet & screen **PRINTING**



CAMGRAPH® HEATERS

Nanosystems

COMMERCIAL

Online Shop

GRAPHENE HEATING

- Flexible
- Light weight
- Fail-safe
- Manufacture by Print or spray

GRAPHENE:
HOMOGENEOUS HEAT
INSTANT HEAT UP

Can be printed or sprayed on any surface:

- Polymers, ceramics, wood & cellulose
- Wearables & Fabrics
- Irregular shaped surfaces

Patent pending
GB 1606676.3 / PCT/GB2017/051058

CAMGRAPH® BATTERIES

GRAPHENE AS CONDUCTIVE ADDITIVE TO LITHIUM ION BATTERY ELECTRODES

CamGraph® powder as conductive additive to the cathode and anode of lithium ion batteries aiming at:

- Enhanced capacity
- Faster charging rate
- Enhanced life time
- Reduced weight

CamGraph® materials 2.5x – 20x conductivity of industrial standard additive carbon black super p.

- ➛ Reduced carbon loading
- ➛ Increased capacity
- ➛ Increased power density

CARBON TYPE	CONDUCTIVITY (S/M)*	BET* (M^2/G)	PORE VOLUME (CM^3/G)
CAMGRAPH G1	6500	310 ±10	0.15
CAMGRAPH G2	2200	240 ±10	0.12
CAMGRAPH G3	950	120 ±5	0.06
CARBON BLACK	~370	60 ±5	0.03

*DETERMINED BY PELLET METHOD.

*N_2 GAS ADSORPTION.

GLOBAL DEMAND FOR LIBS SET TO RISE FROM 22 GWH [2016] TO 185 GWH [2022]

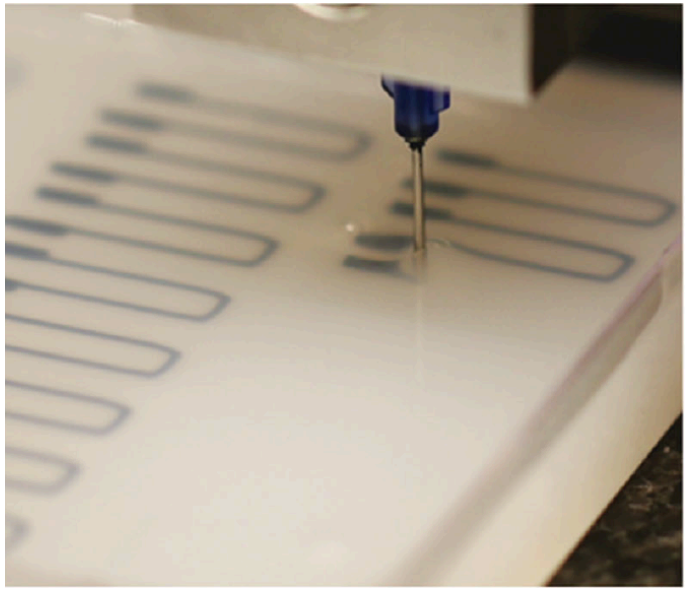
CAMINK® PRINTING

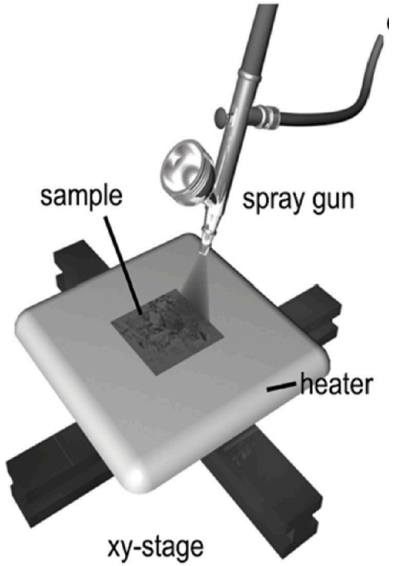
Online Shop

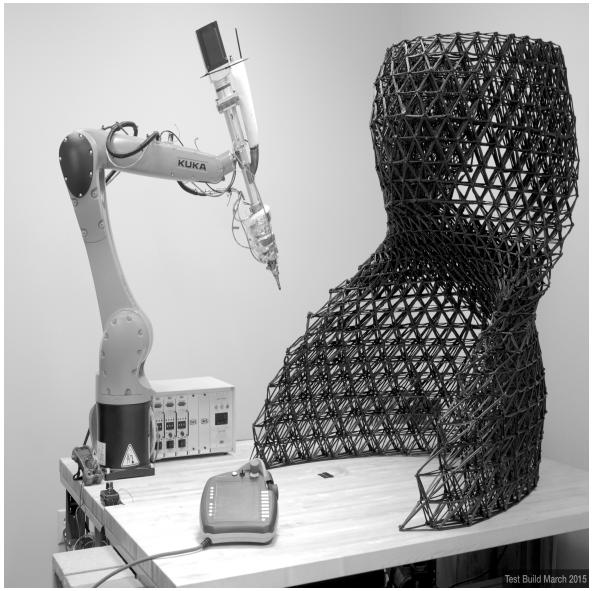
CAMGRAPH® BASED INKS FOR

- Inkjet & screen printing
- 3D printing & functional additive manufacturing
- Spray coating and functionalisation

THE CONDUCTIVE INKS MARKET IS SET TO GROW FROM USD 2.3B TO USD 7.6B BY 2027.







Its good processability allows for Camgraph® implementation into a variety of solvents and polymers.

CAMINKS® BASED SENSORS

- Inkjet printed
- Highly flexible
- Light weight
- Wearable substrates

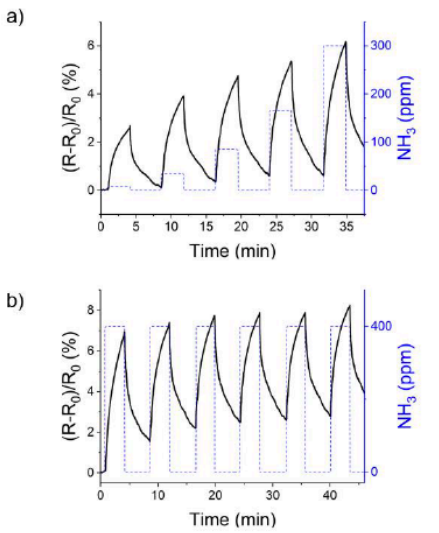
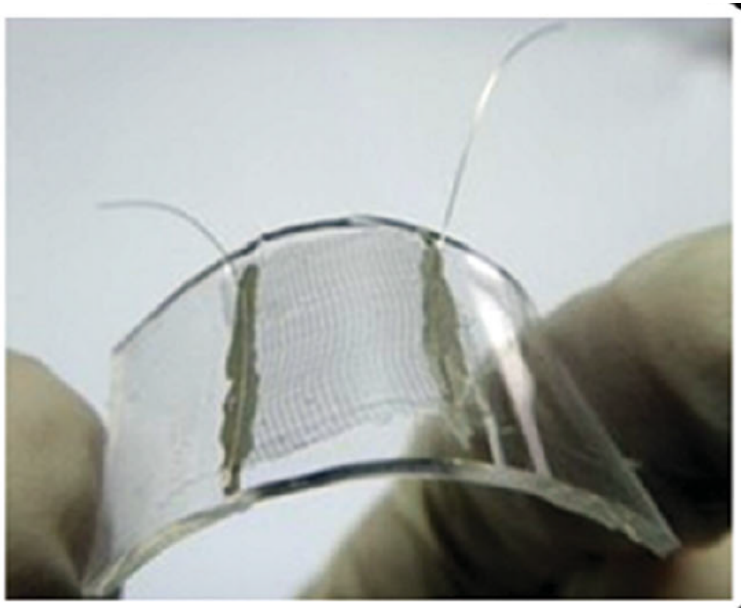
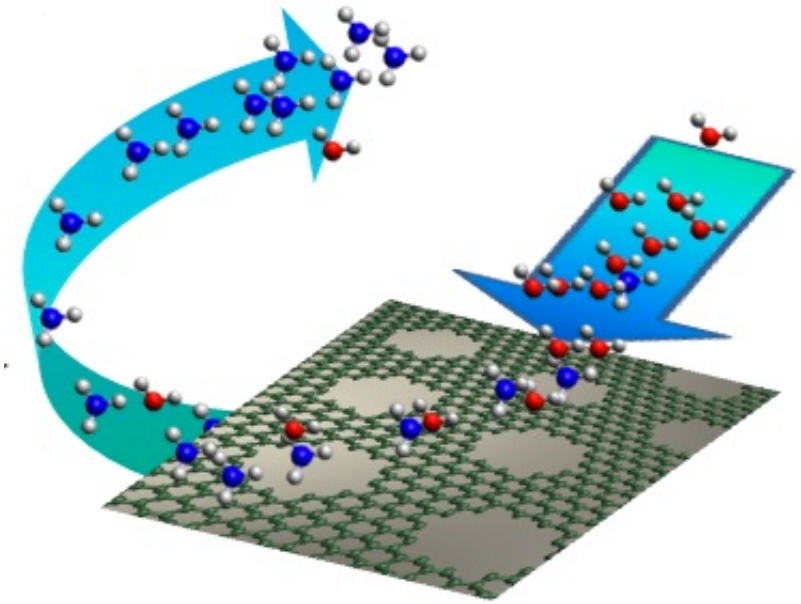


Figure 2 (a) relative signal to various concentrations of NH_3, (b) relative signal to a repeated concentration of 400 ppm NH_3





FLEXIBLE STRAIN SENSOR | PRINTED GAS SENSOR

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INNOVATE WITH US

For further information please get in touch:

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