



Università  
di Catania

# Paper-based chemosensors based on Zn(II) salen-type complexes for selective and quantitative detection of Nitrogen-containing Volatile Organic Compounds (N-VOCs)

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Pillar Environment - Spoke 1 UniCT/WP 2/Task 3

**SAMOTHRACE 2<sup>nd</sup> Year:  
Experimental Prototypes Demo Showcase**

SAMOTHRACE PROJECT ECS00000022

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Finanziato  
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*non-methane hydrocarbons (NMHCs)*

*halogenated VOCs*

*volatile organic sulfur compounds (VOSCs)*



*oxygenated VOCs (O-VOCs)*

*nitrogenous-containing VOCs (N-VOCs)*

**Volatile Lewis bases**

**Gas-Chromatography - Mass Spectrometry (GC/MS)**

**EXPENSIVE** 100-300€/sample  
**TIME-CONSUMING**  
**REQUIRING TRAINED PERSONNEL**



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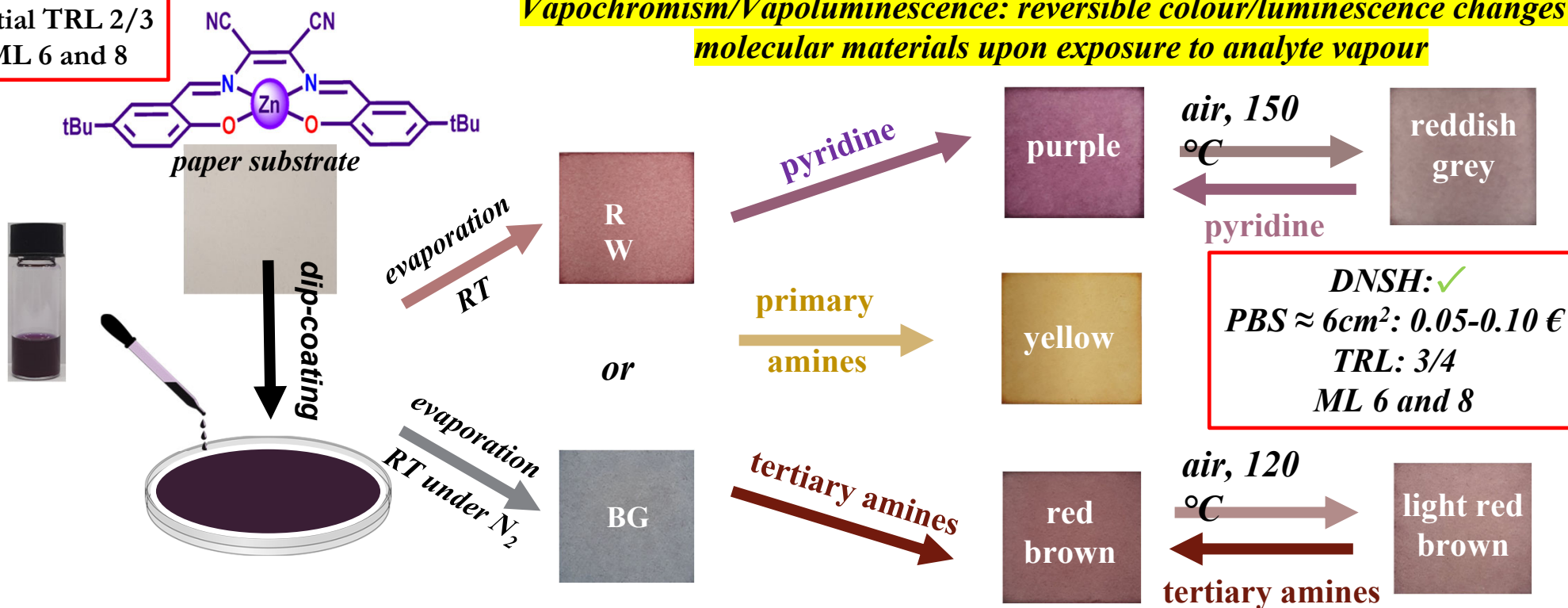
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Initial TRL 2/3  
ML 6 and 8

**Vapochromism/Vapoluminescence: reversible colour/luminescence changes of molecular materials upon exposure to analyte vapour**



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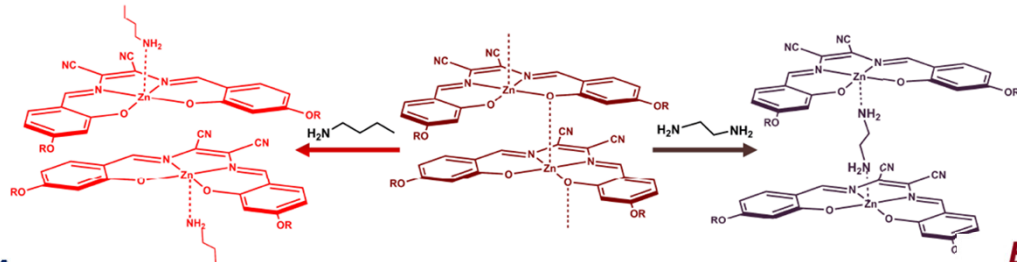


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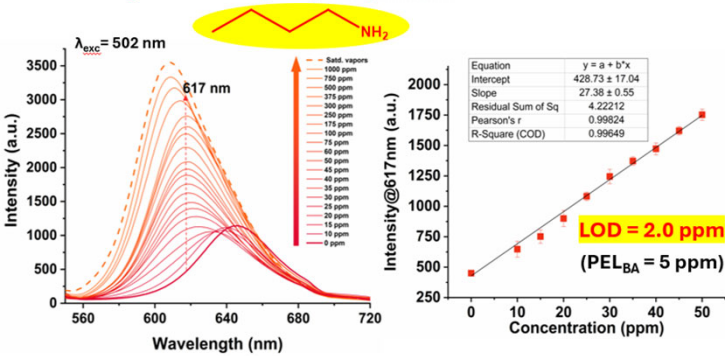


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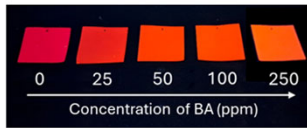
# Quantification of BA and EDA



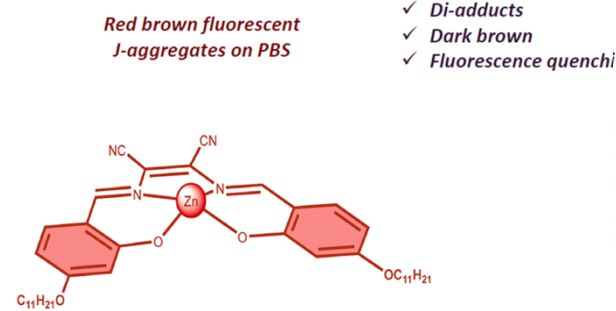
## *n*-butylamine (BA) vapours - TRL 4



Photographic images of PBS exposed to various concentrations of BA vapors under 365 nm light

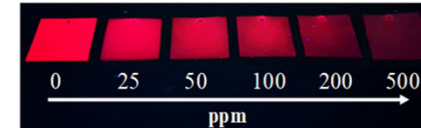
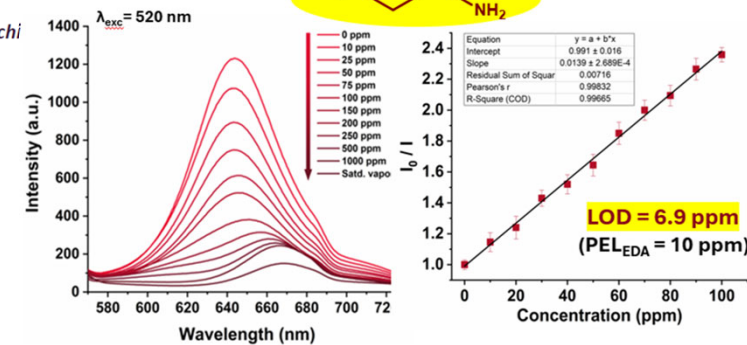


## Ethylenediamine (EDA) vapours - TRL 4



## ML 10 and ML 12

PEL: Permissible Exposure Limit



Photographic images of PBS exposed to various concentrations of EDA vapors under 365 nm light



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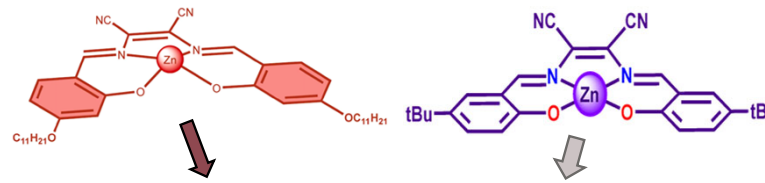
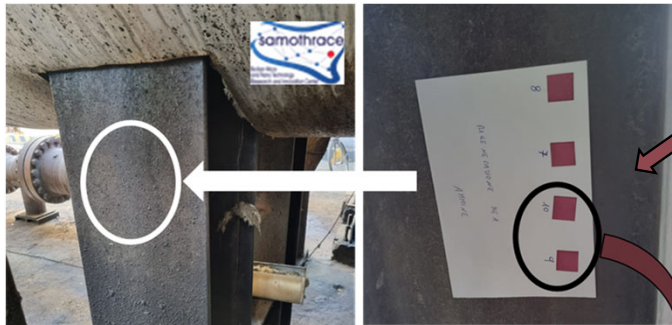
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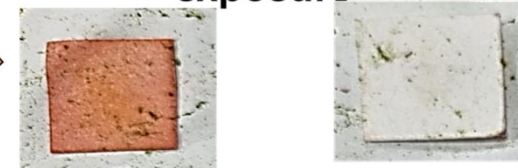
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## Amines production site



PBSs before exposure



after 24 hours of exposure

## Petroleum refining (topping) sites

(ML 12 – TRL 4/5)

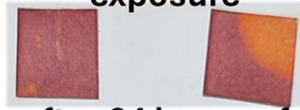


(ML 14 – TRL 6)

*Identification and quantification of N-VOCs detected in situ at industrial sites*



PBSs before exposure



after 24 hours of exposure



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**Prof. N. Tuccitto**

Spoke 1 Leader:

**Prof. S. Mirabella**



**VISIT OUR DEMO AT  
BOOTH N. 45**



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