

# I CONVEGNO ISTITUTO DI SCIENZE POLARI

Py-GC/MS as a  
complementary technique  
for the chemical  
characterization of small  
microplastics (<100  $\mu\text{m}$ ) in  
polar samples

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# Microplastics analysis

## Visual methods

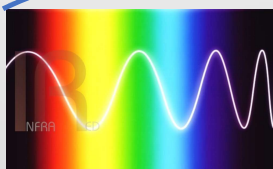
Optical microscopy



Scanning electron  
microscopy (SEM)

Light scattering particle counter

## Spectrometry methods



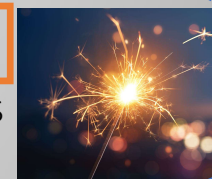
μ-FTIR

μ-Raman

## Thermal analysis

Py-GC/MS

TED-GC/MS



MPs

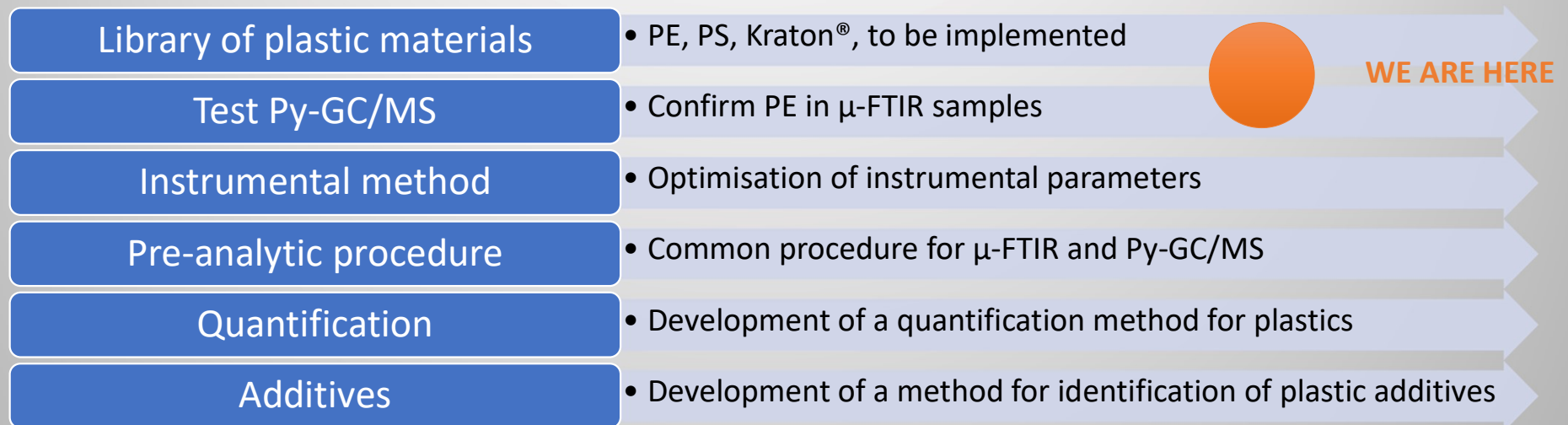
# $\mu$ -FTIR vs. Py-GC/MS

BEST FOR  
PARTICLE  
NUMBER  
NON-  
DESTRUCTIVE

$\mu$ -FTIR	Py-GC/MS
Visual identification → particle number, size distribution, shape	No visual identification
Identification of polymers by FTIR	Identification of polymers by MS
Quantification of mass concentration estimated by density	Direct quantification of mass concentration
Non destructive	Destructive
Time-consuming	Not time-consuming

BEST FOR  
IDENTIFICATION  
QUANTIFICATION  
FAST

# Our plan



# Our contribution



Occurrence of emerging  
contaminants (plastics  
and additives) in the  
Polar Regions

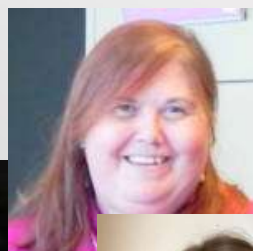
Contaminants  
trasport to the  
Poles

ecosystem response  
to contaminants  
exposure

interaction  
between various  
environmental  
domains

# Thanks

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