



Abundance and Composition of Microplastics in Surface Sediments of Three Selected Rivers in Southwestern, Nigeria



11 SUSTAINABLE CITIES AND COMMUNITIES



15 LIFE ON LAND



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Introduction

- ❖Contaminations of the environment by microplastics (MPs) is an emerging concern globally¹, and are found in various sources (Fig. 1).
- ❖MPs are known as vectors or carriers of pollutants like potentially toxic elements (PTEs).
- ❖Several studies have focused on marine systems but studies on freshwater are few^{2,3}

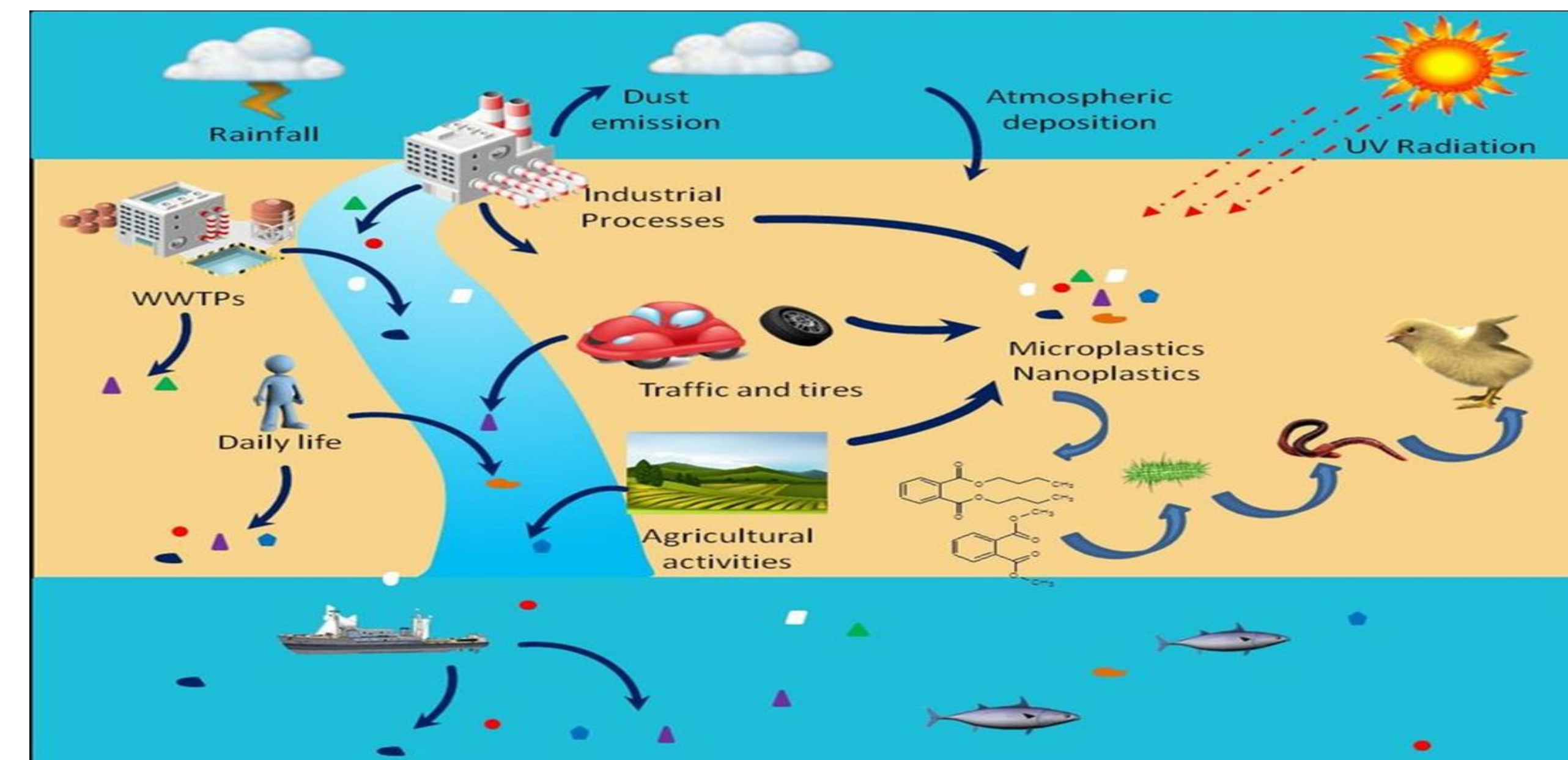


Fig. 1: Sources of microplastics⁴

Objective

- ❖Determine the abundance, colour, shapes, and polymer types of microplastics in the three selected Nigerian rivers

Experimental method

Sample area: The Ogun (latitude 7°11' 12.6" N and longitude 3°19'55.8" E), Odo-Ona (latitude 7°22' 52.6" N and longitude 3°50'46.6" E), and Osun (latitude 7°33'12.3" N and longitude 4°12'22.9" E) Rivers are freshwater systems in Southwest, Nigeria (Fig.2).

Sampling method:

The surface sediment samples were collected from 5 points along the river using a stainless steel hand trowel and further characterized (Fig.3).

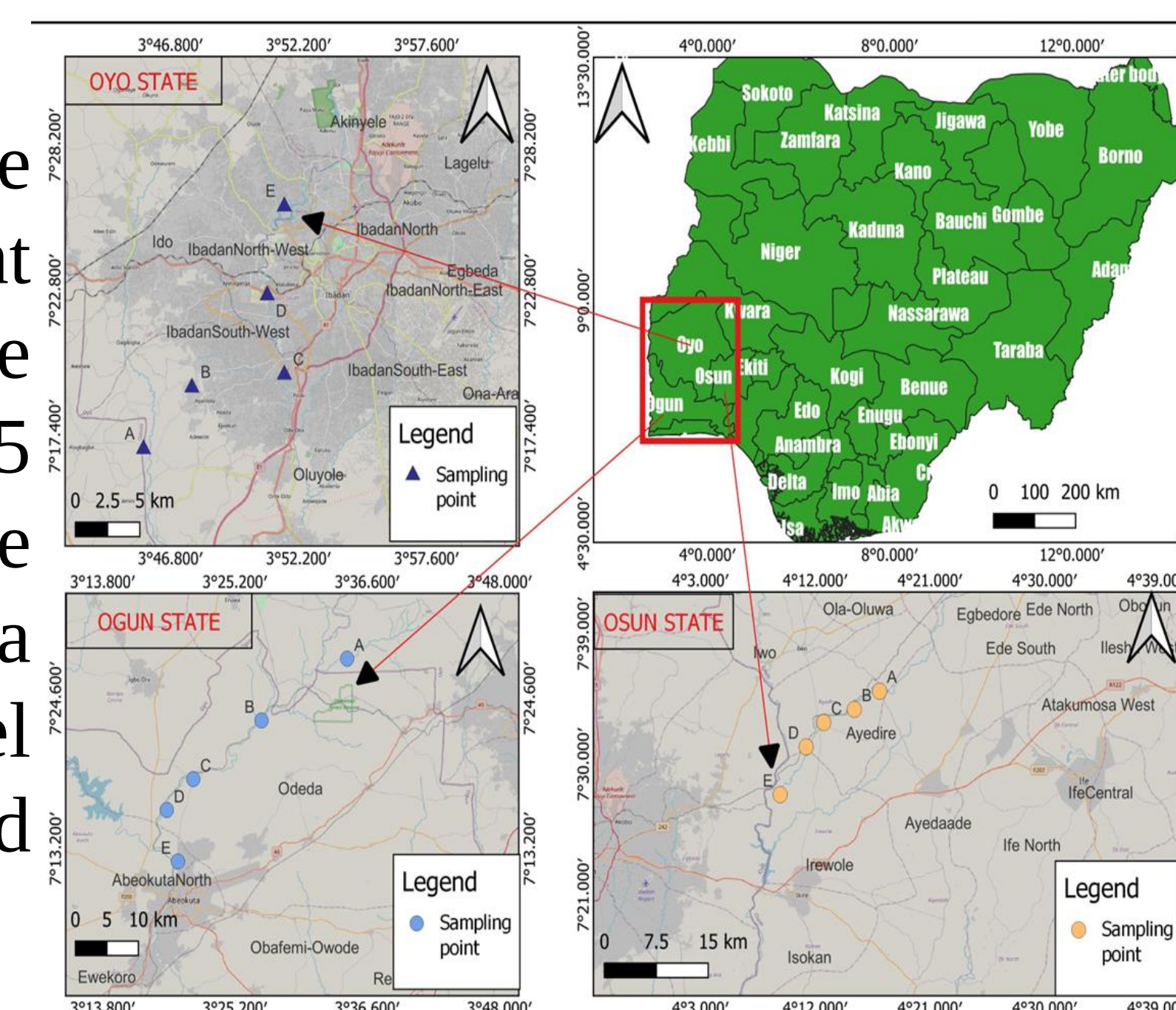


Fig.2: Map of sampling locations



Fig. 3: Graphical representation of the methodology

Results

1. Microplastic Abundance

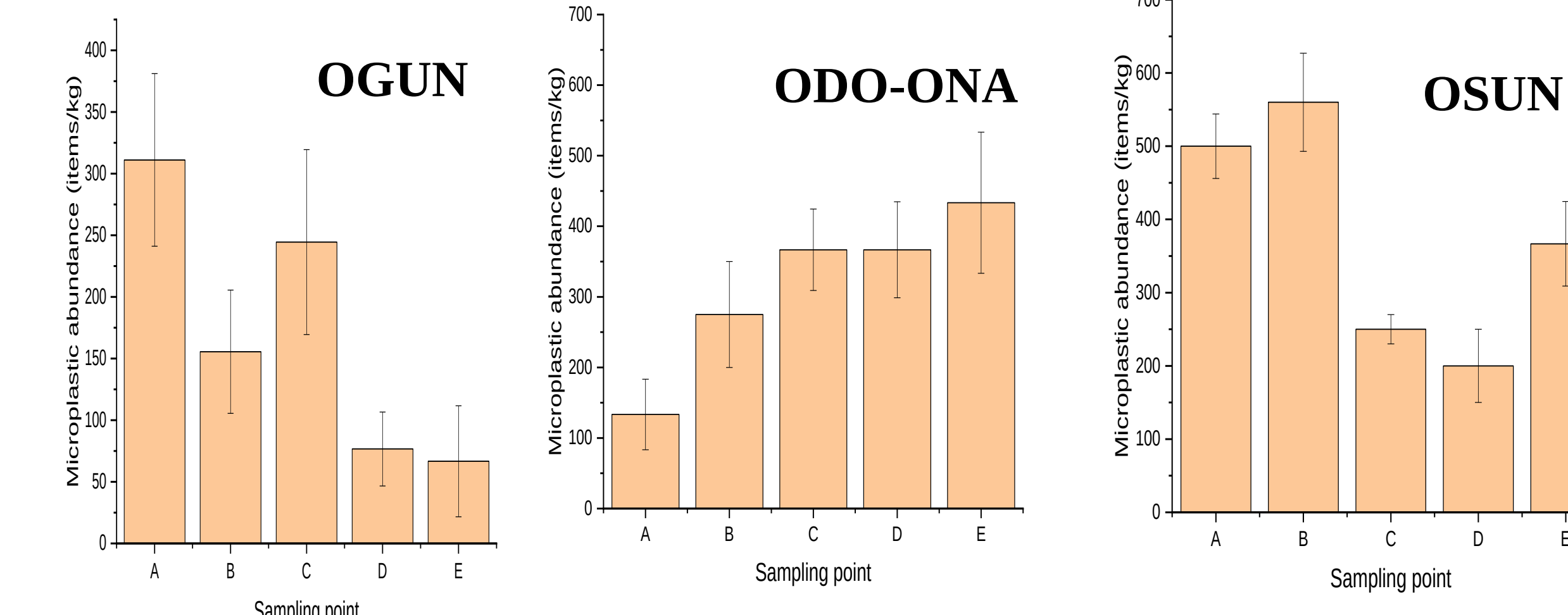


Fig 4: Microplastic Abundance

2. Microplastic Shape, Colour, and Sizes

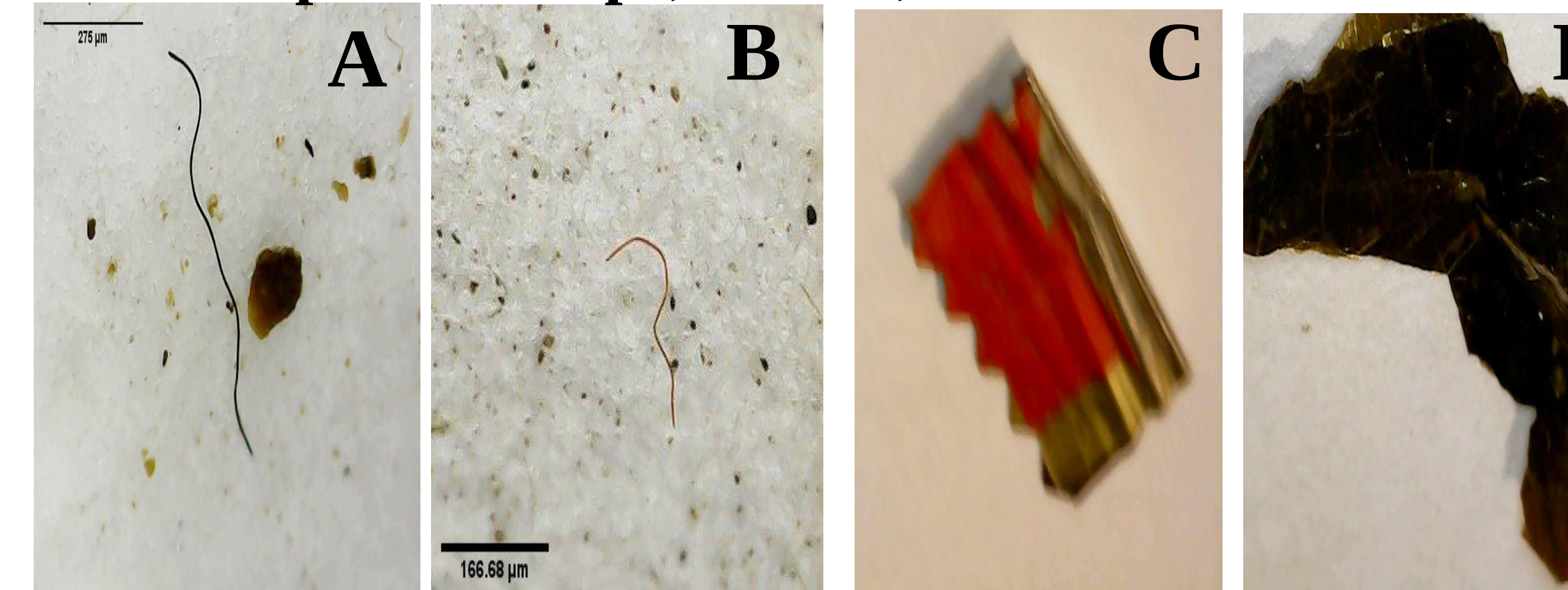


Fig 5: Fibre (a – b), Fragment (c), Film (d)

3. Microplastic Polymer type

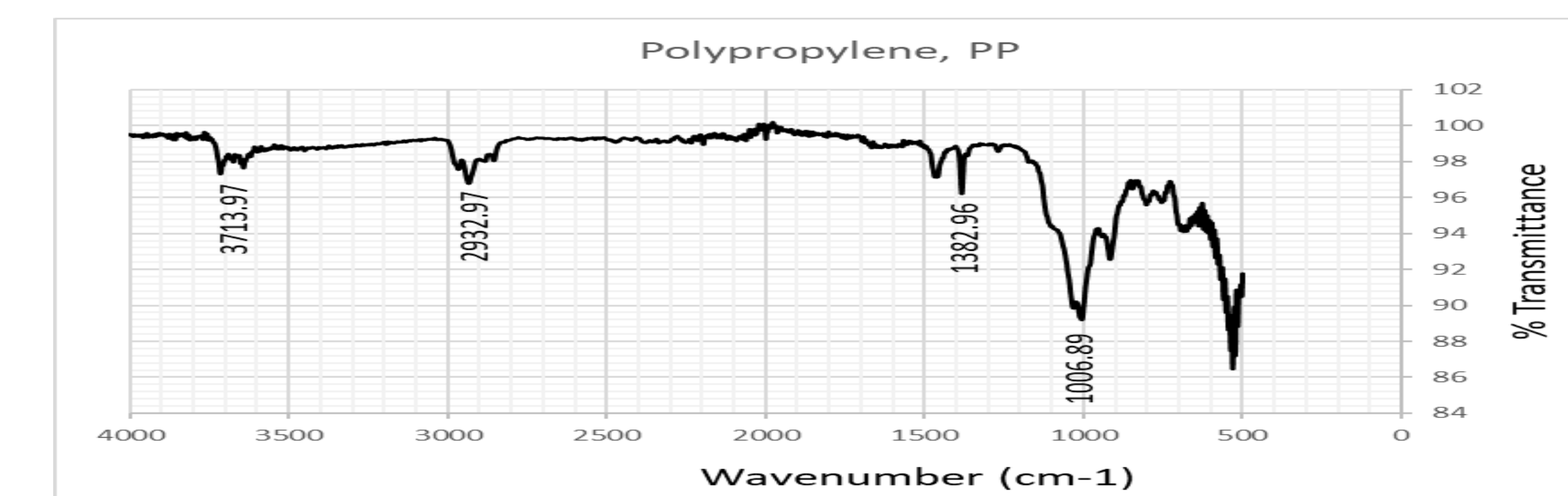


Fig 6: FTIR Spectrum: Polypropylene (PP)

Conclusions

- ❖The present study established the abundance, and composition of MPs, in sediments of Ogun, Odo-Ona, and Osun Rivers, Nigeria.
- ❖The overall abundance of MPs observed in the sediments were 852, 1573, and 1877 items/kg for the Ogun, Odo-Ona, and Osun Rivers, respectively.

- ❖Fibres, fragments, and films were predominantly found with red, black, and blue being the most common colours.

Ongoing research

- ❖Determination of potentially toxic elements (PTEs) in sediments and recovered MPs from the rivers.
- ❖Determination of the pollution sources and assessment of the risks associated with PTEs in the sediments.

Acknowledgements

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Some References

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