

The UltraDry project - Developing a dry coating process for synthetic graphite anodes

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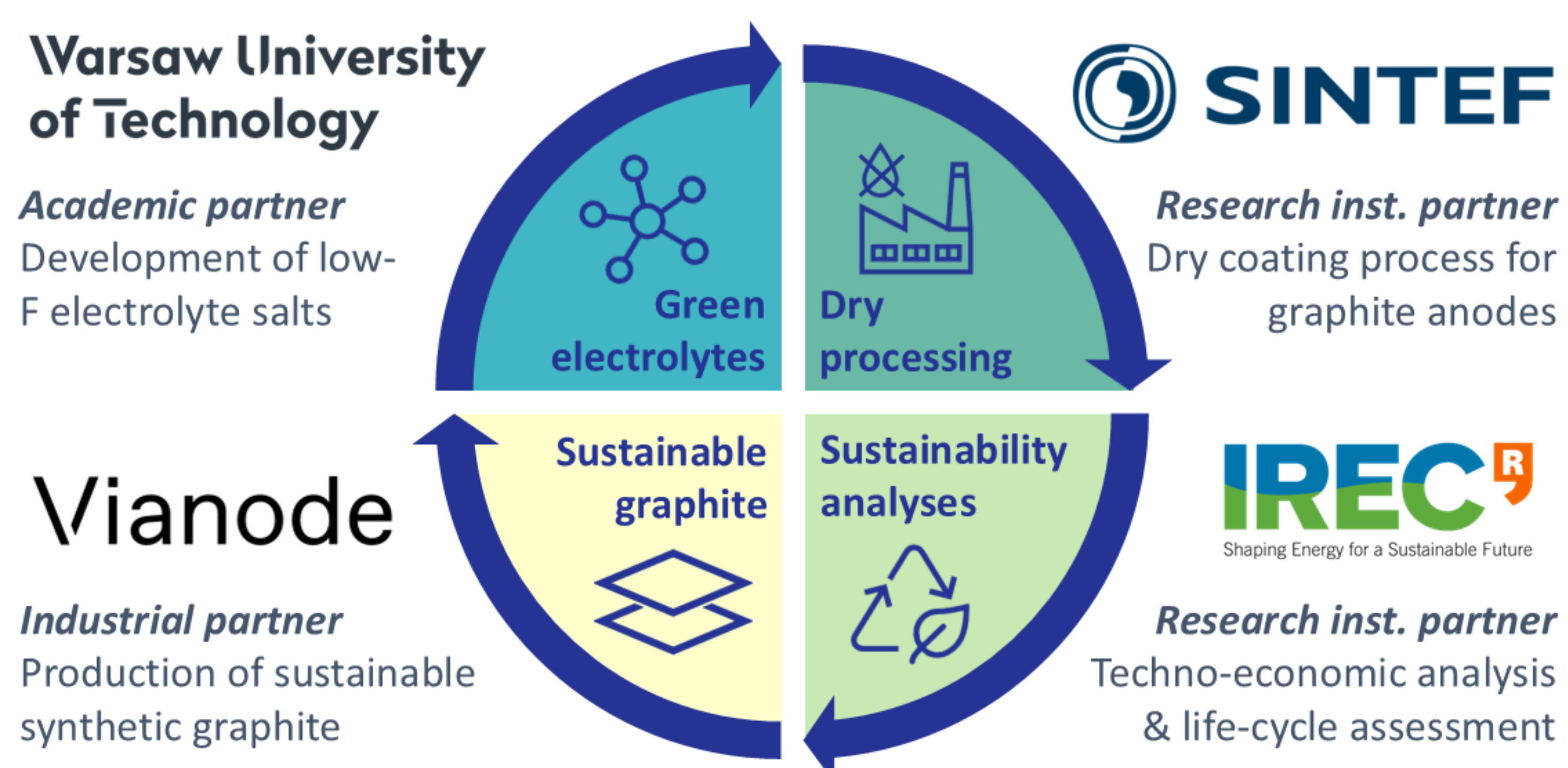
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The overall objective of the UltraDry project is to improve the **sustainability of Li ion batteries**, by (a) contributing to the fundamental understanding necessary to unlock the potential of **dry processing of graphite anodes** and (b) **reducing the F-content** in the binder and electrolyte.

The UltraDry project

UltraDry is an M-ERA.NET project with 4 partners; SINTEF (Norway), Vianode (Norway), WUT (Poland), IREC (Spain). The project aims to find new solutions to increase the sustainability of Li ion batteries. SINTEF coordinates the project.



Dry processing of graphite anodes

Development of dry processing methods for battery electrodes can significantly improve cost and sustainability.¹⁻³ UltraDry aims to add insights to the dry processing of synthetic graphite anodes.

Key research questions of interest for the project:

- What is the **interlink** between the different dry processing steps and how to optimize these?
- How to **quantify** the degree of fibrillation?
- How does the **graphite properties** influence the dry processing and final anode coating?
- Which strategies are effective to avoid **PTFE degradation** in the anode during cycling?

Figure 1: Overview of the UltraDry project partners and their role in the project.

Literature survey

We have identified 29 scientific papers and reports on dry processing of graphite anodes.

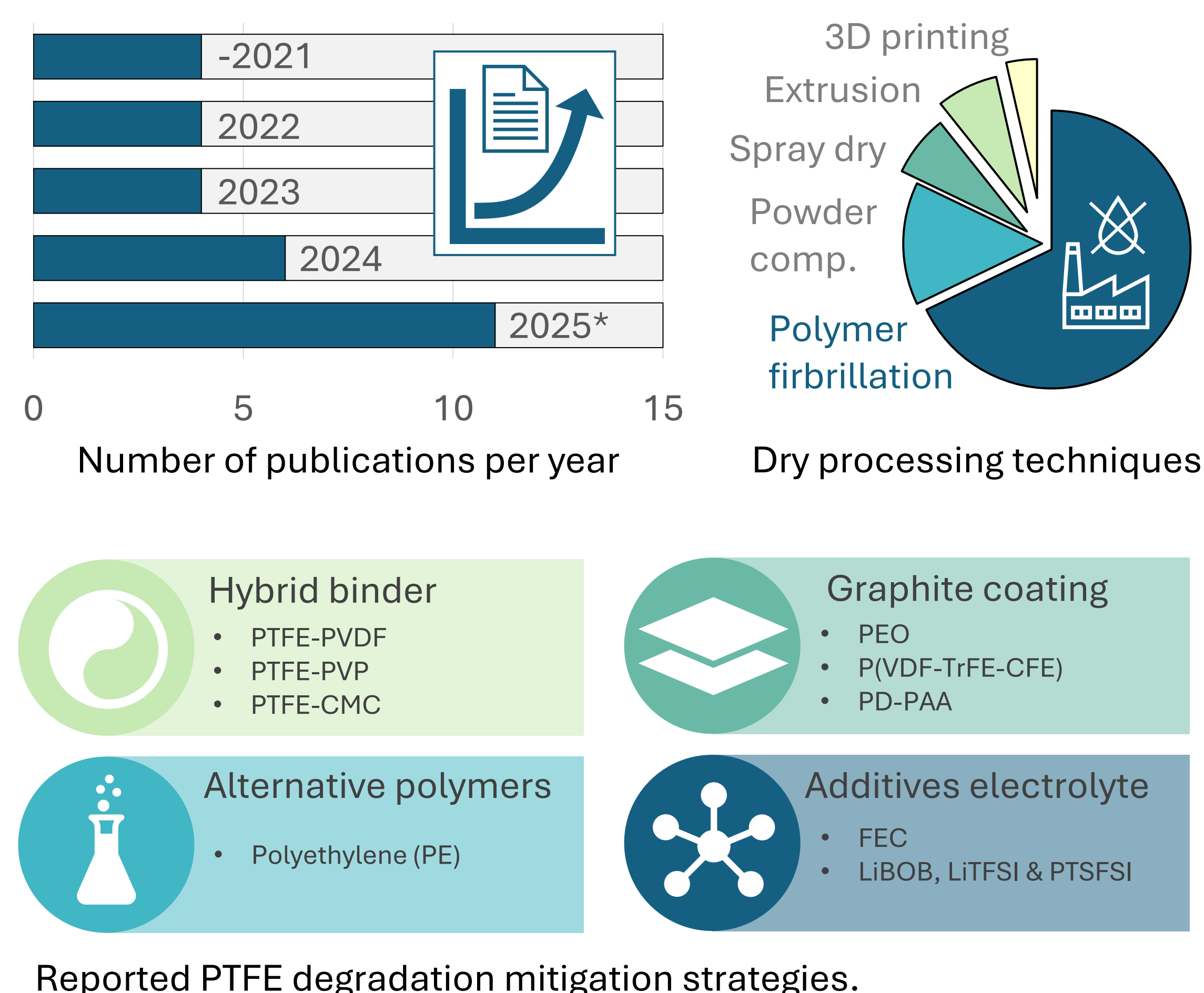


Figure 2: Literature survey statistics and strategies. *As of 20.10.2025.

Preliminary results & Analysis

A lab-scale dry processing route, initially developed with cathode active materials, is being modified for graphite anode coatings. Fibrillation and adhesion of free-standing film to current collector being optimized. SEM analysis algorithms are developed to quantify powder homogeneity.

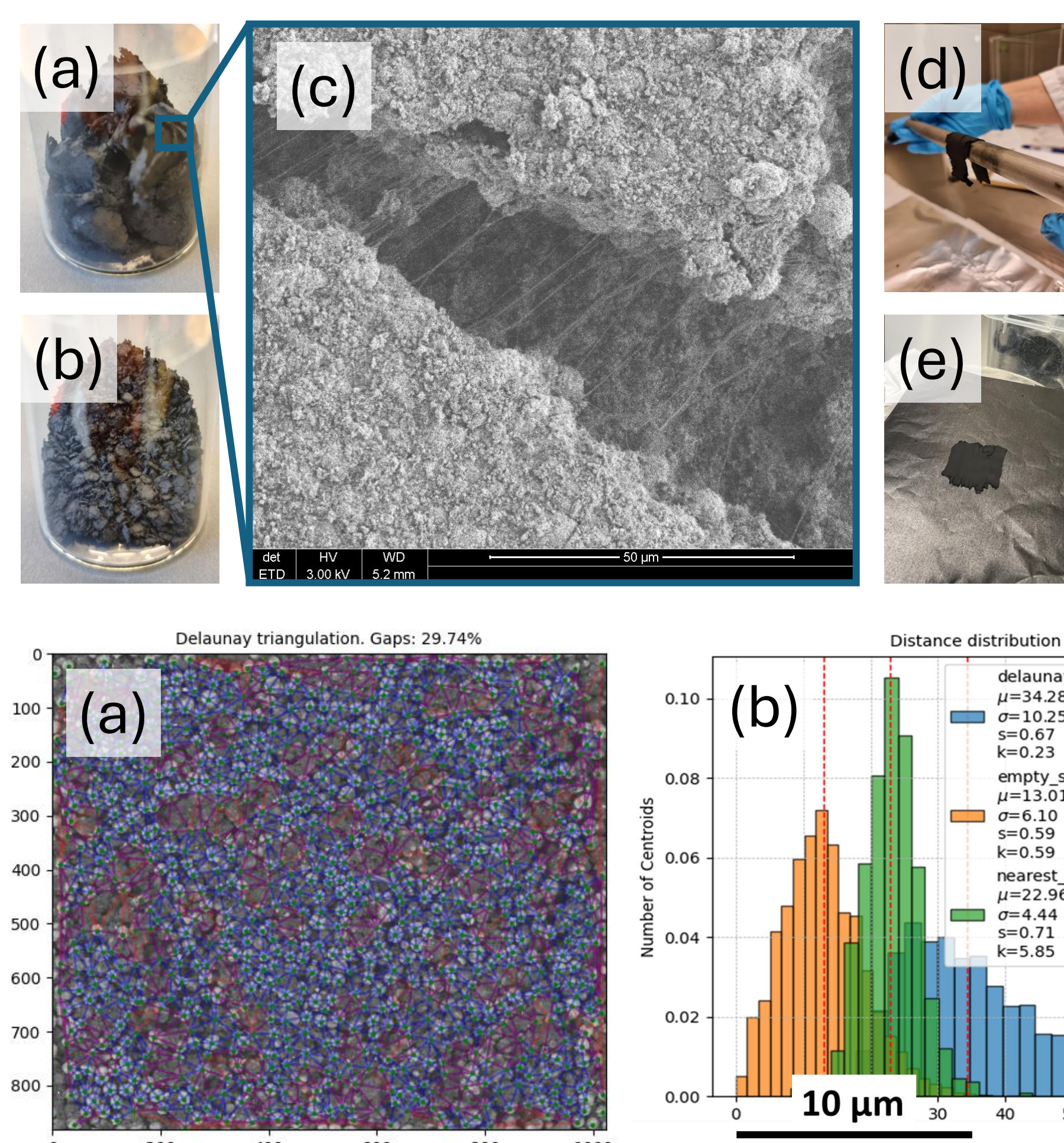


Figure 4: (a) SEM/EDS micrograph where distances between particles are identified, (b) histogram of calculated distances between particles.

Acknowledgements

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References

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2. N. Verdier et al., *Polymers*, **2021**, 13, 3.
3. A. Dupuy et al., *J. Energ. Storage*, **2025**, 134.