

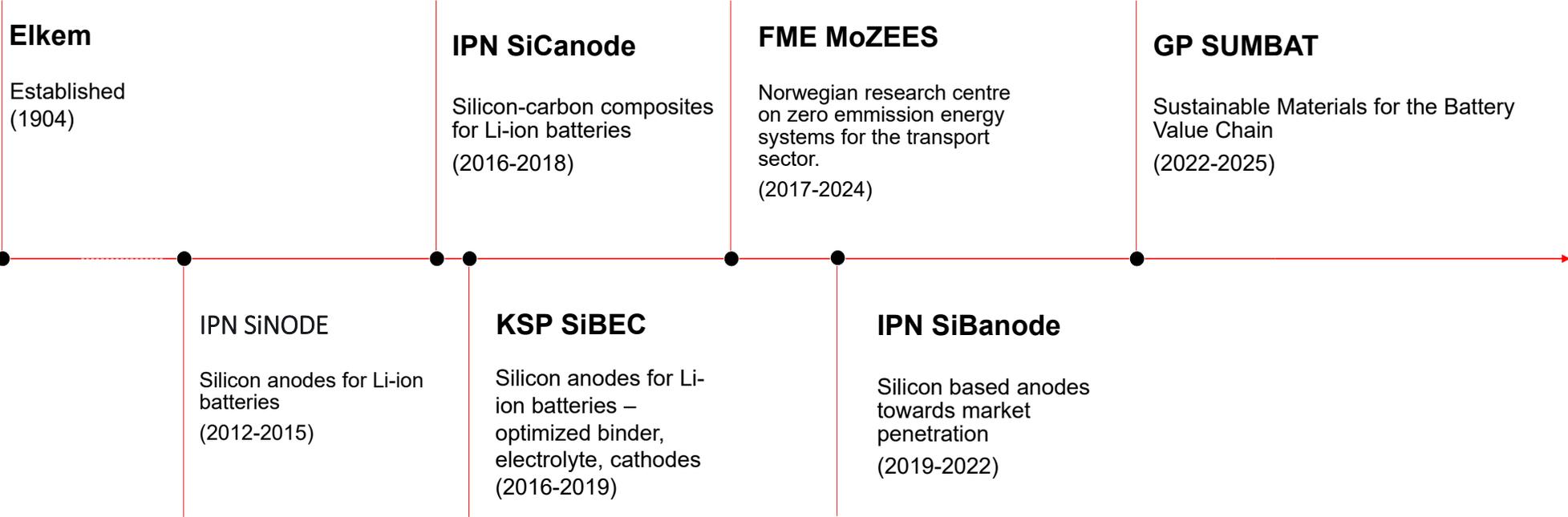
SUMBAT

June 16th, 2025

Gro Eide

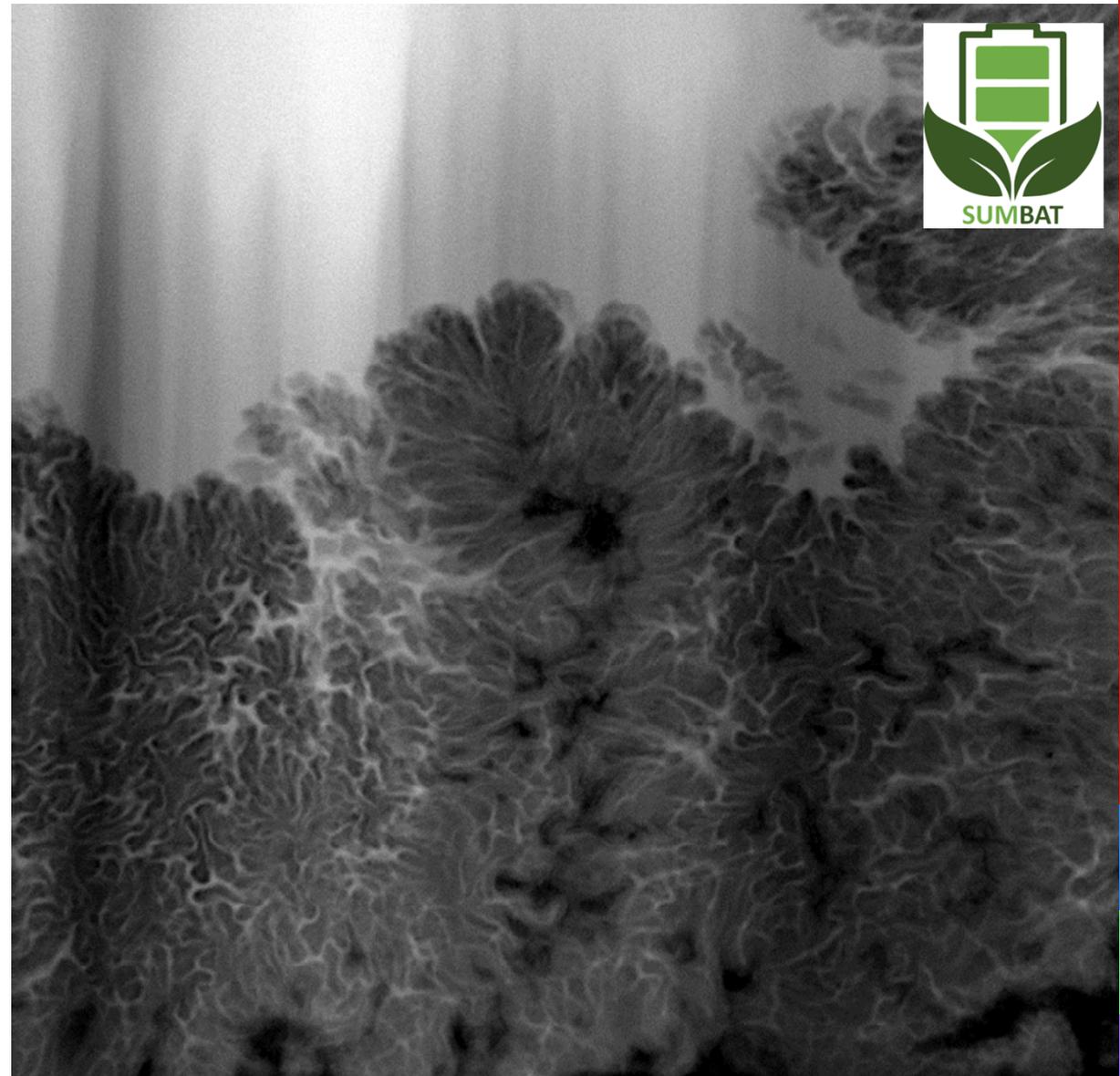
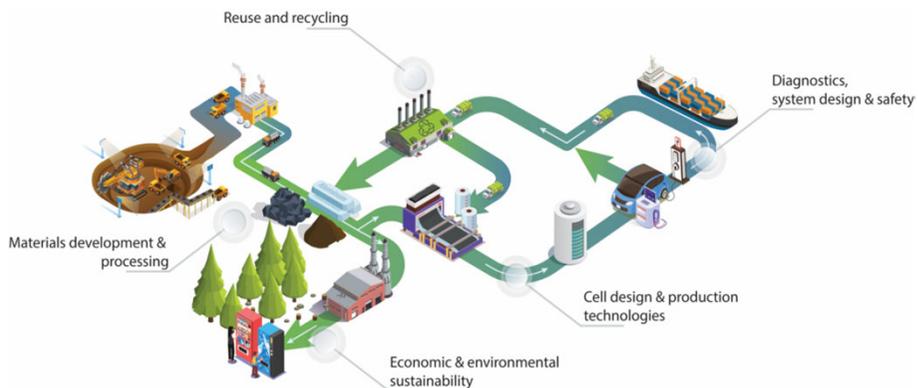
VP Innovation Elkem Silicon Products

Elkem Timeline – Recent Battery Projects



SUMBAT

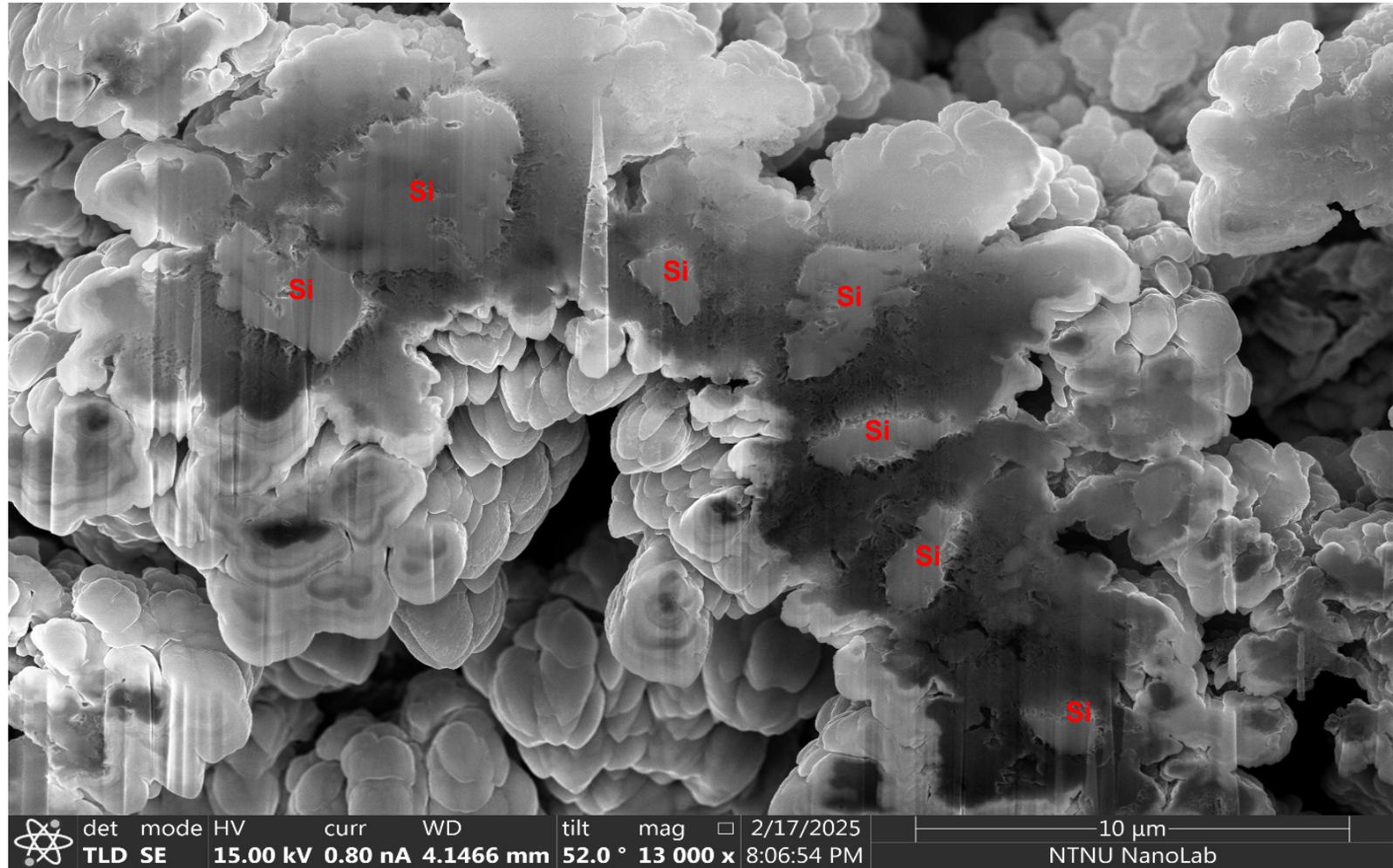
- Building a network for national battery value chain
 - Corvus Energy, Elkem, FREYR, Future Materials, Hydro, IFE, Morrow, NTNU, SINTEF, UiA, UiO, Vianode
- Scaling up in cooperation with partners has been technically challenging
 - Reactivity on the interface has been increasing?



Example of learning from scale up of battery cell

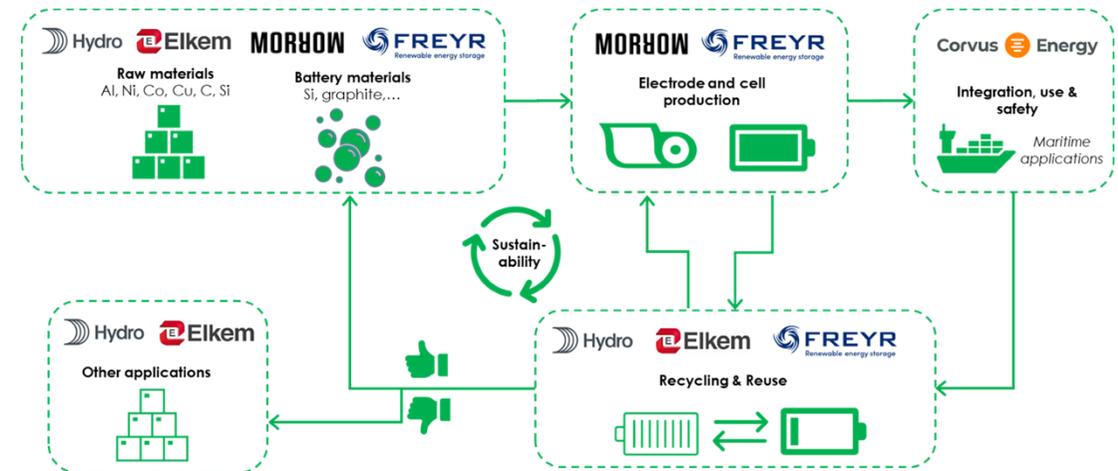
Pouch cell

- There is formation of thick SEI layers
- Si surface morphology has slightly transformed.
- Utilization of Si low.



Elkem – silicon for batteries

- Elkem has a strong position as material supplier to the battery value chain
- Several potential technological solutions under development for Si-anode
- Elkem is already delivering increasing volumes of silicon to the battery producers



Silgrain[®] e-Si

Silgrain[®] e-Si is a variety of silicon products tailored for silicon-based anodes in rechargeable lithium-ion batteries.

- Micronized metallurgical silicon
- Hydropower-based production
- Consistent in sizing and chemical composition
- Complete value-chain from quartz to finished Silgrain[®] e-Si product
- Silgrain[®] e-Si products can be customized upon requests
- Full life cycle assessment (LCA) data for Silgrain[®] e-Si products available



Typical chemical analysis data for Silgrain[®] e-Si

Analysis	Si wt%	Fe wt%	Al wt%	Ca wt%	Ti wt%	P ppmw	B ppmw
Max		0.03	0.10	0.015	0.003	30	35
Typical	99.8	0.02	0.08	0.009	0.001	25	30

Some examples of Silgrain[®] e-Si products

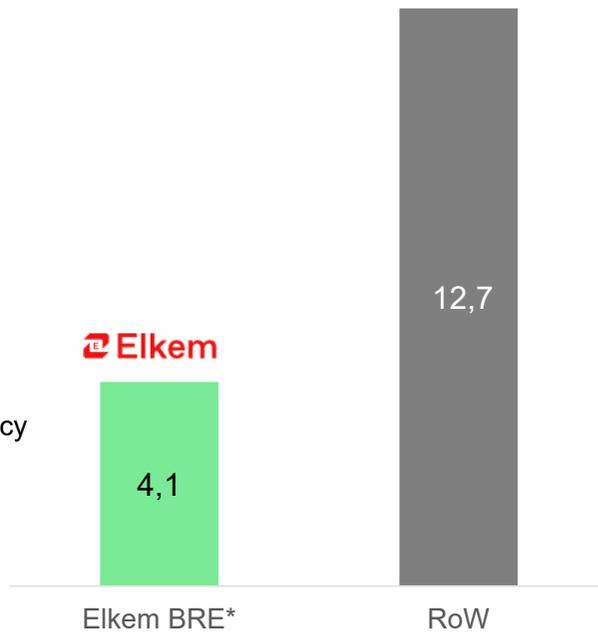
Product name	Specification
Silgrain [®] e-Si 408	0-8 μ m
Silgrain [®] e-Si 410	0-10 μ m
Silgrain [®] e-Si 420	0-20 μ m
Silgrain [®] e-Si 500	0-10 μ m with 800 ppm P
Silgrain [®] e-Si 503	0-10 μ m with 1000 ppm B
Silgrain [®] e-Si 507	0-10 μ m - 99 % purity
Silgrain [®] e-Si 802	2 - 6 μ m

Silgrain[®] from Elkem has a low CO₂ footprint

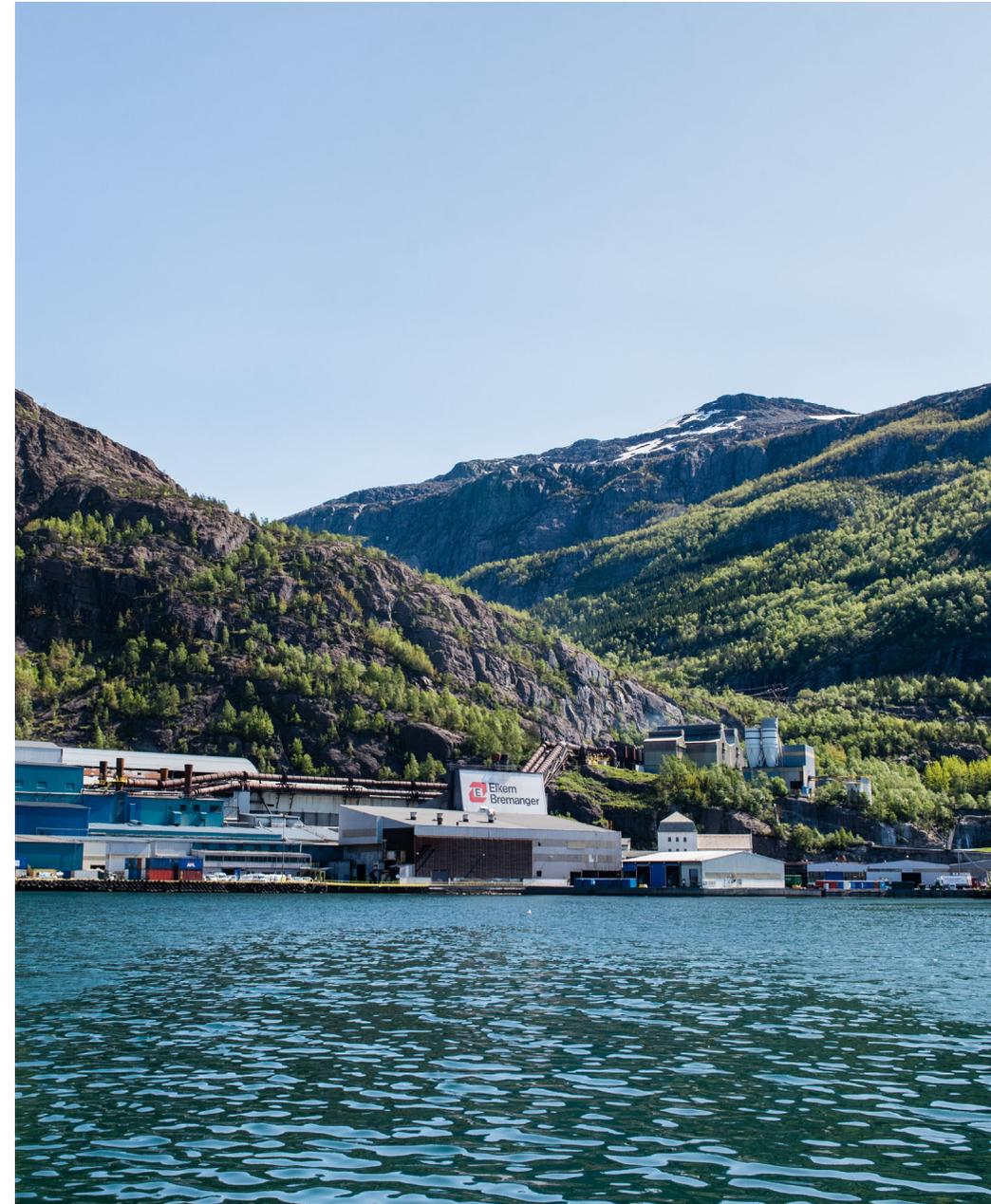
Climate change (IPCC2021 GWP 100a v1.02)

kg CO₂-eq/kg silicon

- Hydro power
- Bio reductants
- Operational efficiency
- Energy recovery



* Elkem Bremanger LCA (reference period 2022) scope 1,2,3, cradle-to-gate, Bremanger plant
Source: Elkem Bremanger LCA, RoW EcoInvent





Delivering your potential