

Graphene Oxide towards Industrialization

Rune Wendelbo

Abalonyx AS, Forskningsveien 1. 0373 Oslo, Norway

rw@abalonyx.no

Abstract

Abalonyx has, over the last 12 years developed a solid position in the graphene oxide ecosystem. Starting off with preparing 1 gram of GO in 2008, using the un-safe Hummers method¹. In 2014 we verified our proprietary, safe and scalable process producing our first 1 kg-batch. In 2017 we verified safe operation in an explosion lab, simulating five different failure scenarios. Among these, we simulated cooling failure, resulting in 1 h with temperatures well above 60 °C. With this result, we were in position to scale up further, but market demand was lagging behind. Until this year.

This year we have received inquiries for pricing and lead-times of up to 100 tons, from companies on 3 continents clearly demonstrating that several application projects around the world have successfully entered pilot-phase or beyond. Luckily, in this situation, we could engage with the Norwegian industrial company Aker who now owns the Abalonyx technology with aims to become a leading player in graphene oxide production and application.

With Aker engineering competence on board, we now set up a new production line with capacity 8 tons/year before summer 2022 [Fig.1]. The line will be fully automated, securing batch to batch reproducibility, but also being tuneable to facilitate production of different grades of GO.

In parallel we now develop several secondary treatment processes for GO to be able to respond to the range of requirements we experience from different customers.

References

[1] W.S. Hummers and R.E. Offeman. J.Am-Chem.Soc. 1958, 80, 6, 1339

Figures



Figure 1: Schematic illustration of planned GO production facility