

## Application Note

# Technoorg's Gentle Mill for preparing high performance FIB-STEM/TEM samples

FIB systems are –among others- largely used to prepare TEM cross section sample lamellae. The advantages of FIB over the more conventional methods include high throughput, high precision, less preferential thinning and large electron transparent areas. The main disadvantage of FIBs is, however, that the relatively high energy and heavy Ga<sup>+</sup> ions cause a damaged (amorphous or implanted) layer that may extend several tens of nanometers into the material. Therefore, FIB in general produces TEM samples which are less suitable for high performance analytical (S)TEM (HRTEM, HRSTEM, high spatial resolution EELS and EDX) investigation.

Technoorg's Gentle Mill is offered for cleaning and final polishing of FIB samples. With its **low-angle, low-energy broad Ar<sup>+</sup> ion beam** it is suitable for removing the damaged layers created by the FIB during lamellae formation and also for further reducing the specimen thickness.

The Gentle Mill is provided with a dedicated low-energy ion gun down to 150eV ion energy (patented) and which allows finishing of silicon FIB samples **in about 10 minutes** for each side.

Low-energy Ar<sup>+</sup> ion milling performed by Gentle Mill on samples prepared by FIB system drastically decreases the damaged, amorphous layer. This allows atomic level structure analysis even of 65 nm node semiconductor devices.

