

ABSTRACT OF THE DISCLOSURE

METHOD TO ETCH NON-VOLATILE METAL MATERIALS

5 A method for etching a stack with an Ru containing layer disposed below a
hardmask and above a magnetic tunnel junction (MTJ) stack with pinned layer is
provided. The hardmask is etched with a dry etch. The Ru containing layer is etched,
where the etching uses hypochlorite and/or O₃ based chemistries. The MTJ stack is
etched. The MTJ stack is capped with dielectric materials. The pinned layer is etched
10 following the MTJ capping.

Fig. 1