



## ABSTRACT

### STUDLESS THIN FILM MAGNETIC HEAD AND PROCESS FOR MAKING THE SAME

A method for pattern-etching thick alumina layers is disclosed, typically for use in the manufacture of thin film heads (TFH) by using compatible metallic mask layers (42, 44, 46) and a dilute (1:2) HF in water etchant. The deep alumina etching facilitates a studless TFH device where the coil and bonding pads (38) are deposited and patterned simultaneously, and vias are later etched through the alumina overcoat layer (40) to expose the bonding pads. The method also enables the etching of scribe-line grooves (13) of street and alleys across the wafer for sawing and machining of sliders. These grooves eliminate most alumina chipping due to stress and damage introduced by the sawing and machining operations. Similarly, pattern-etching of the alumina undercoat (12) facilitates the formation of precise craters for recessed structures. These can improve planarity and alleviate problems related to adverse topography and elevated features of TFH devices.

Fig. 3(a)