

Figure 1: Proposed mechanism for Hacac and O₃ on metal oxides

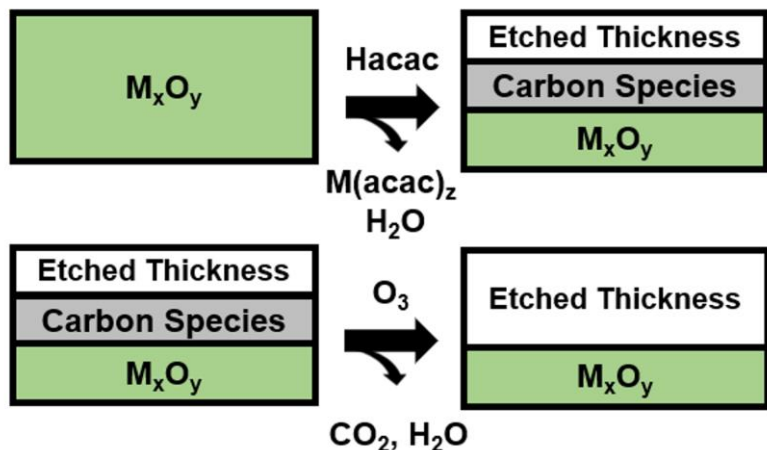


Figure 3: Time resolved QMS signal intensity for x5 Hacac, x1 O₃, x1 Hacac dosing on VO₂ shows two distinct etch products, VO(acac)₂ and V(acac)₃, which decrease in intensity with each sequential Hacac dose, and increase after exposure to O₃.

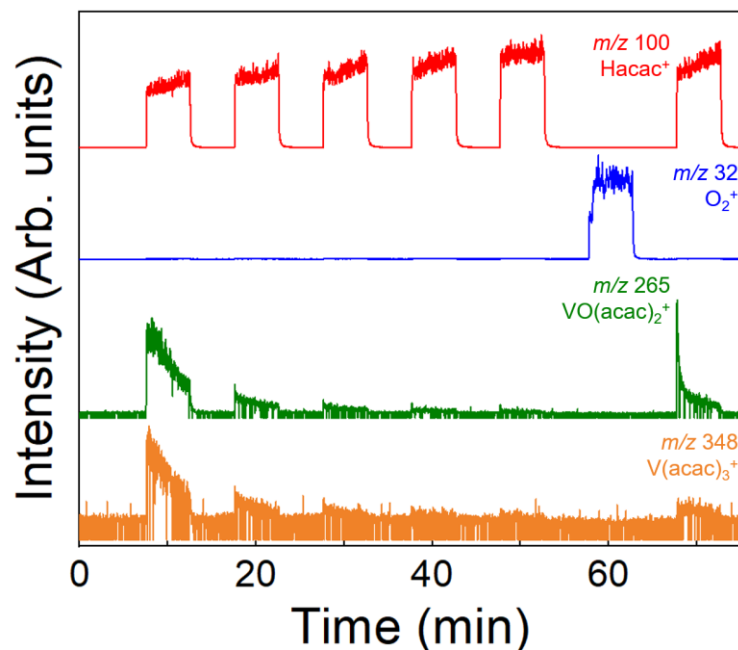


Figure 2: Zn(acac)₂ etch product during Hacac exposure on ZnO at 250 °C matches expected isotopic ratios

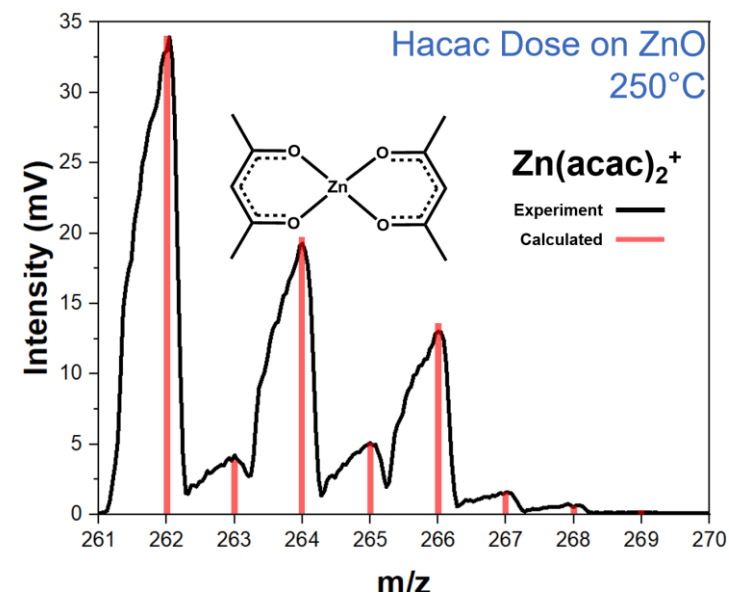


Figure 4: Overview of the survey of first row d-block metal oxides thermal etching with Hacac and O₃ at 250°C

Metal Oxides

21	22	23	24	25	26	27	28	29	30
Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn
Scandium	Titanium	Vanadium	Chromium	Manganese	Iron	Cobalt	Nickel	Copper	Zinc
+3	+4	+5 +4	+3	+4 +3 +2	+3 +3/+2	+3/+2 +2	+2	+2 +1	+2
<p>Legend:</p> <ul style="list-style-type: none"> Blue box: Etch: Volatile Metal Acetylacetonate Formed Red box: No Etch 									