

## Supporting Information for:

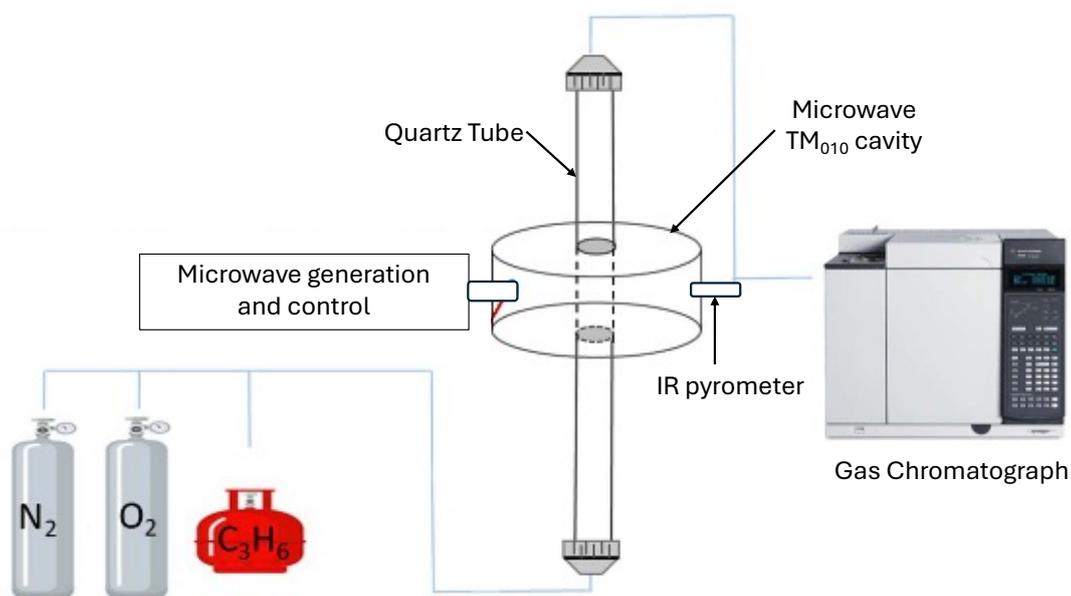
### **Microwave assisted selective oxygenation of propene over bismuth molybdate catalysts: the importance of catalyst synthesis methodology.**

Jia Sun,<sup>[a]</sup> James S. Hayward,<sup>[a]</sup> Michael Barter,<sup>[b]</sup> Daniel R. Slocombe <sup>[b]</sup> and Jonathan K. Bartley\*<sup>[a]</sup>

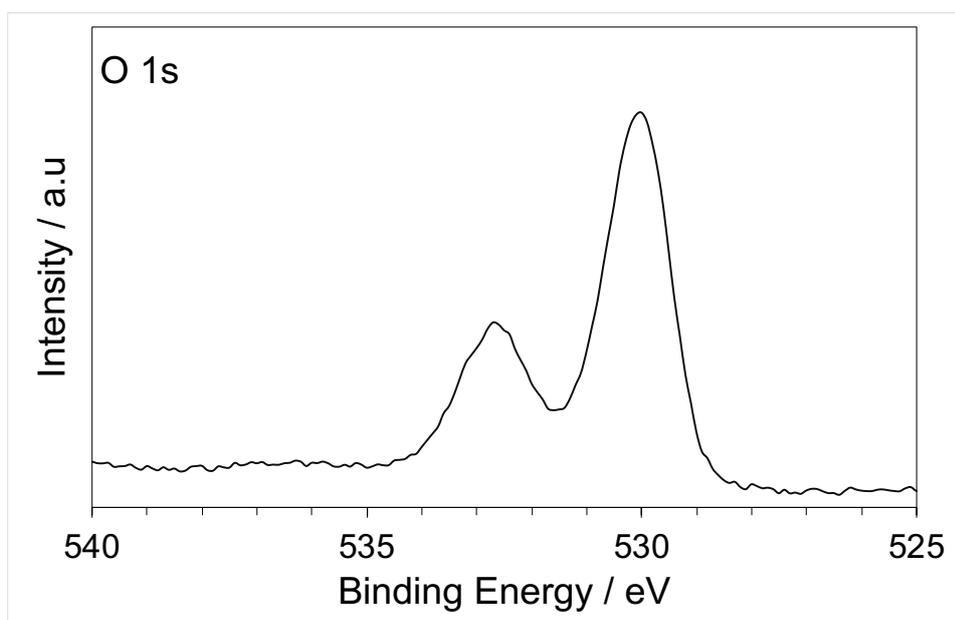
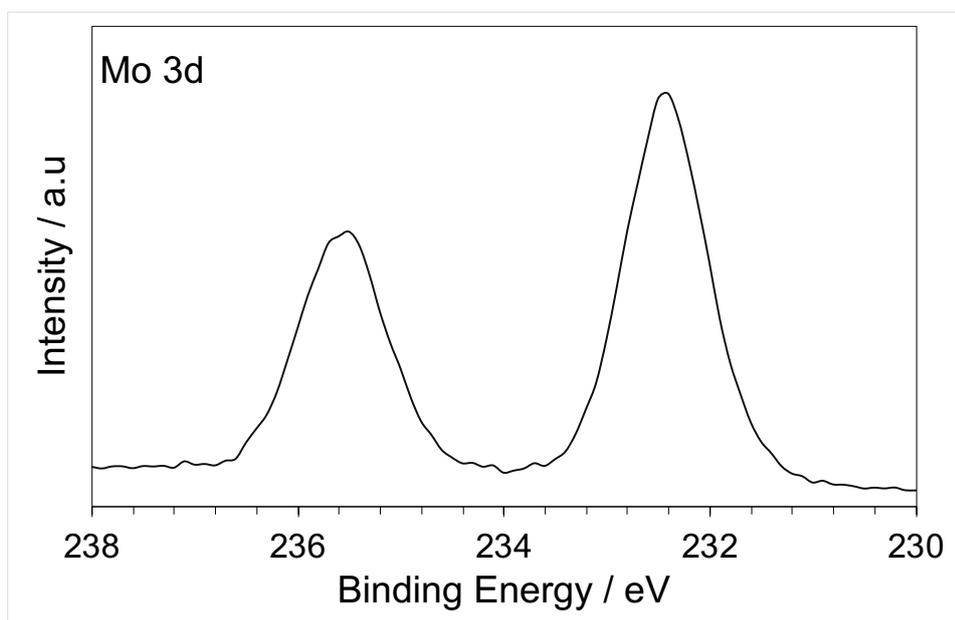
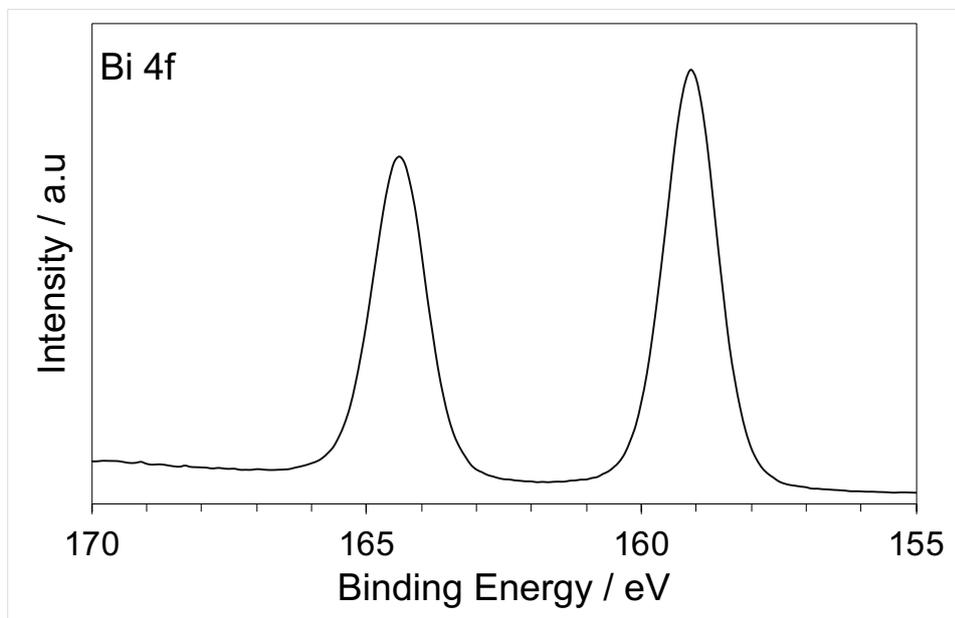
[a] Cardiff Catalysis Institute, School of Chemistry, Cardiff University, Cardiff, UK

[b] Centre for High Frequency Engineering, School of Engineering, Cardiff University, Cardiff, UK

\* E-mail: BartleyJK@cardiff.ac.uk

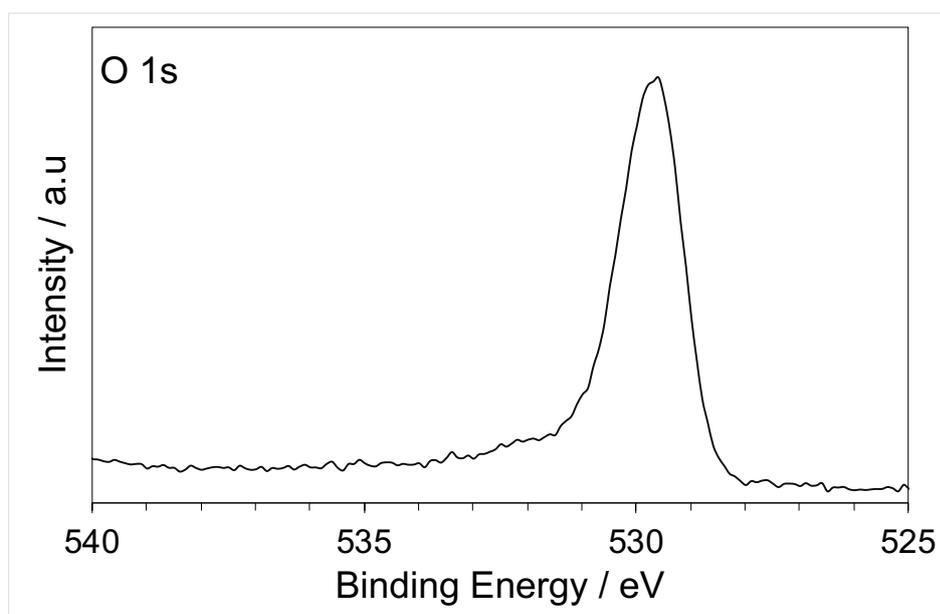
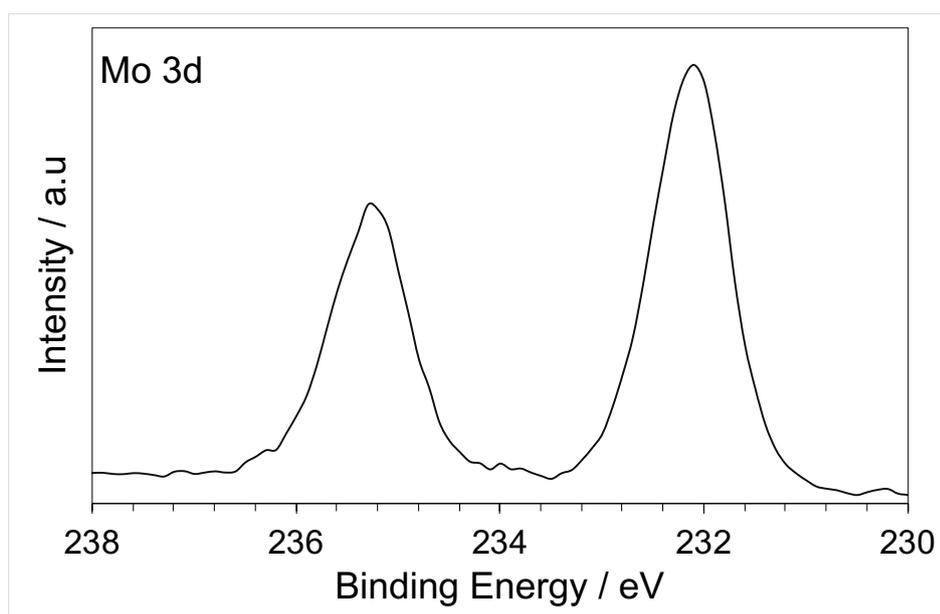
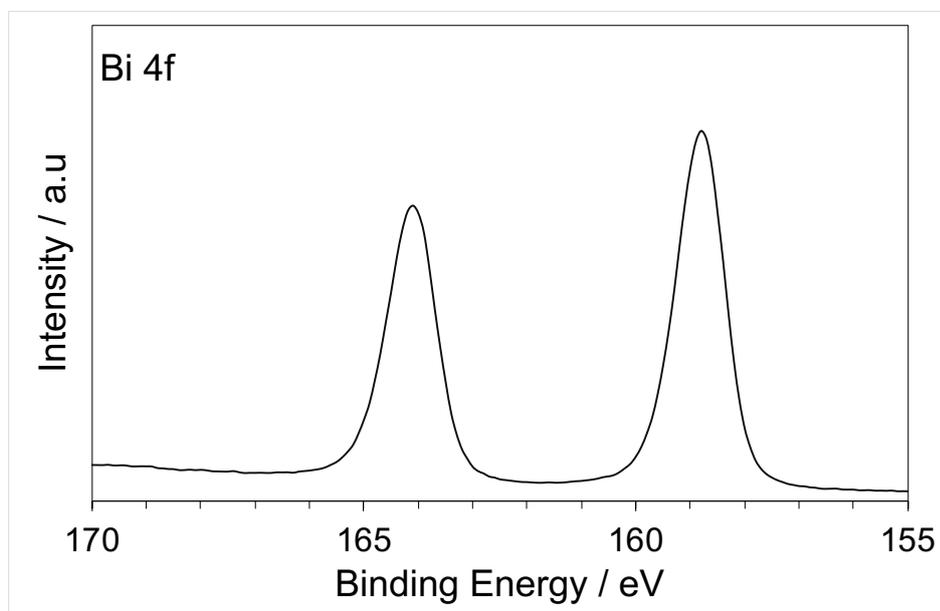


**Figure S1** The reactor set up for the microwave assisted reactions. Temperature of the catalyst bed was monitored remotely using an infrared pyrometer through a hole in the cavity wall. For experiments using conventional heating the microwave cavity was replaced with a tube furnace and the temperature monitored using a thermocouple placed in the catalyst bed.

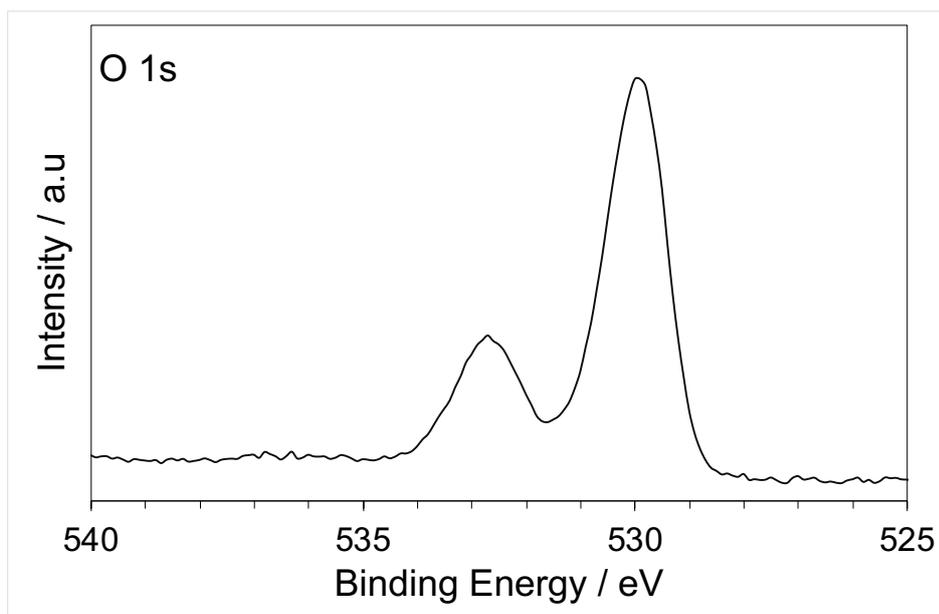
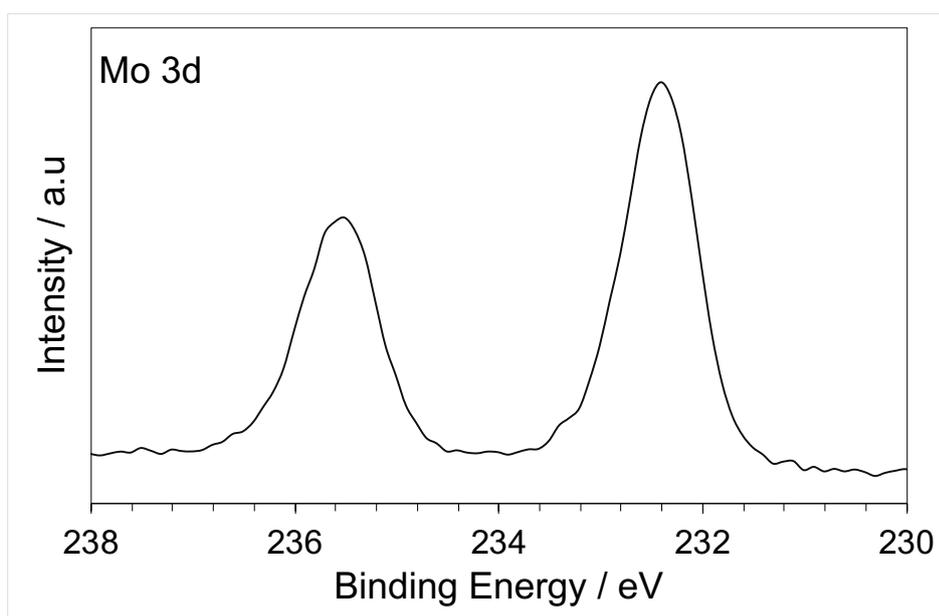
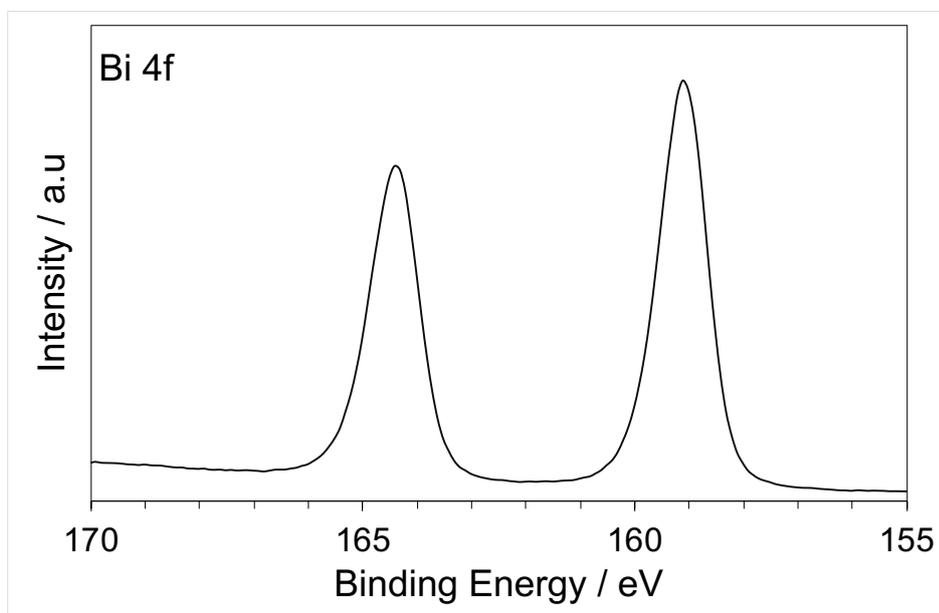


**Figure S2** X-ray

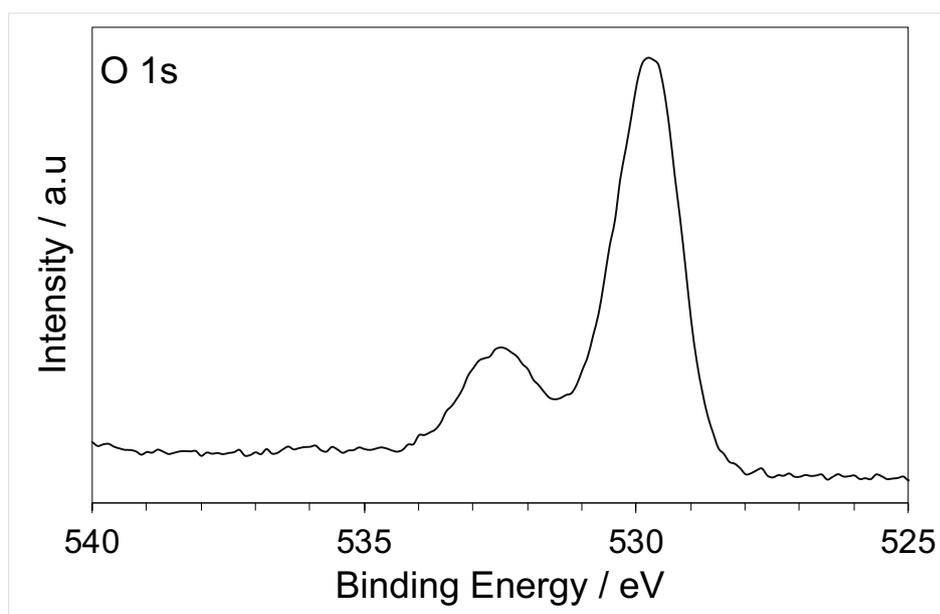
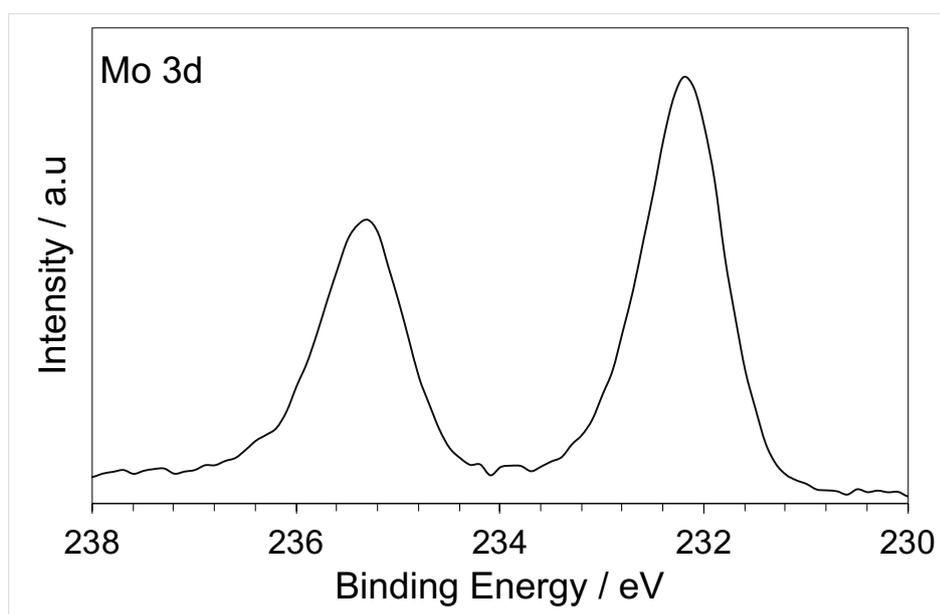
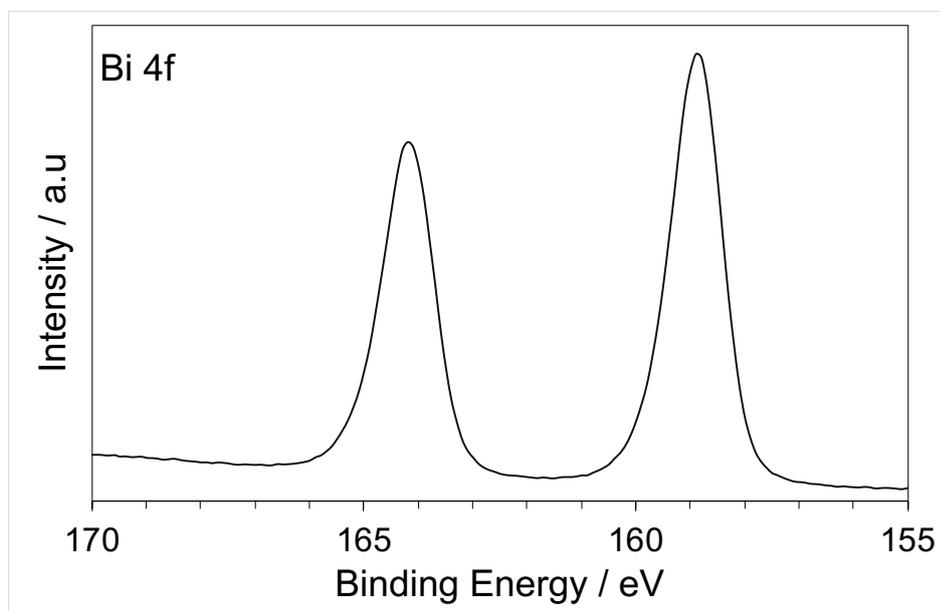
photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 4.



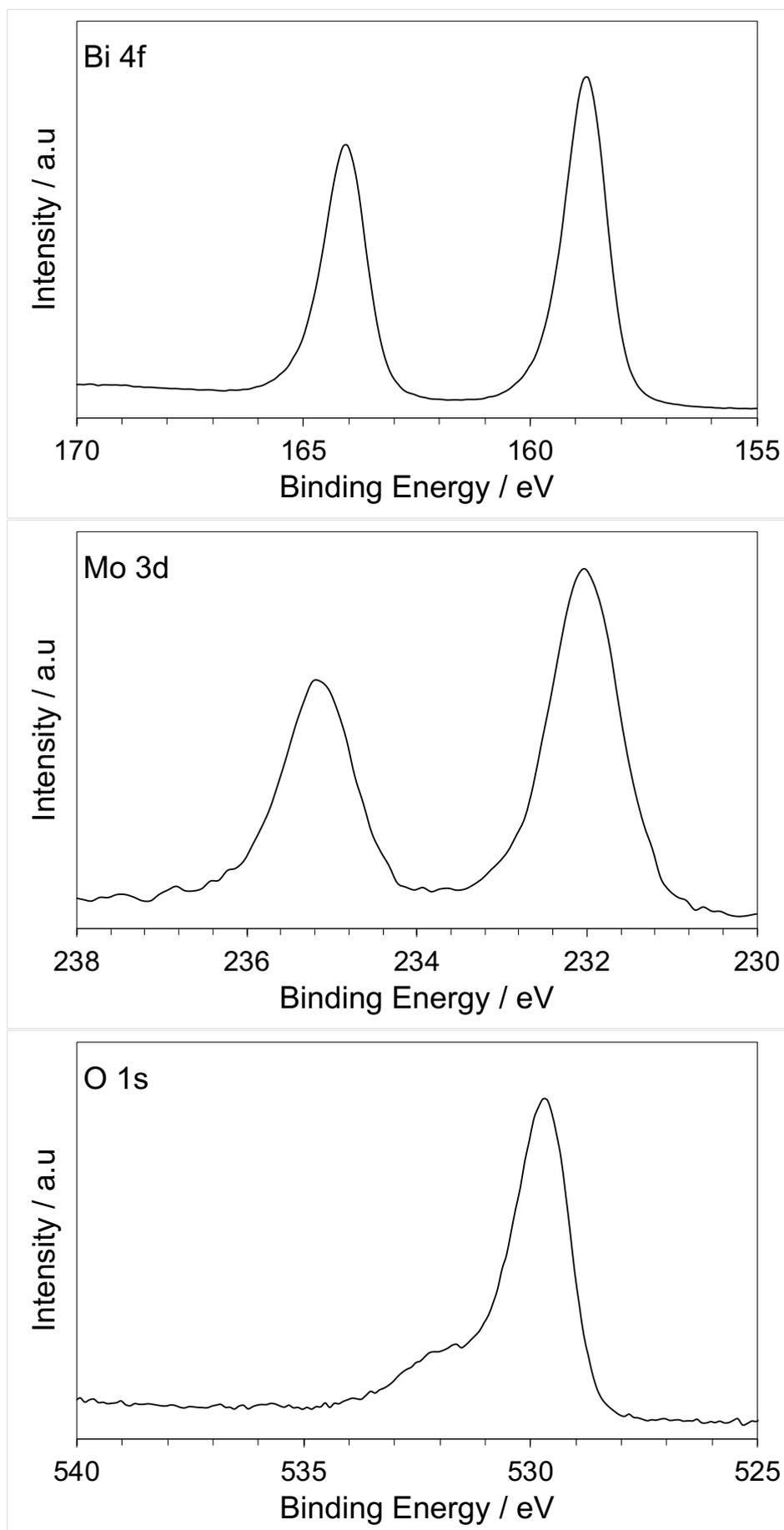
**Figure S3** X-ray photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 4 after calcination at 500 °C.



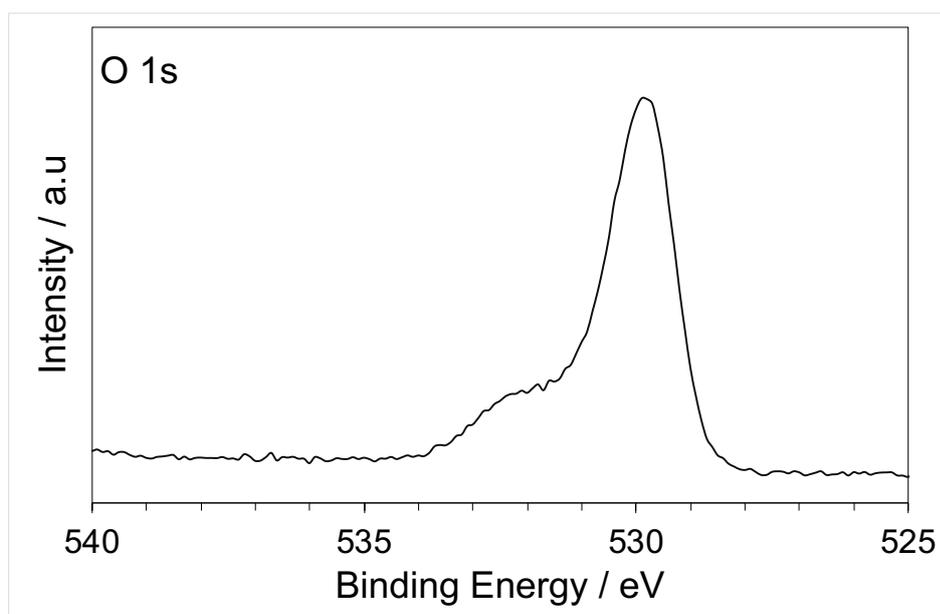
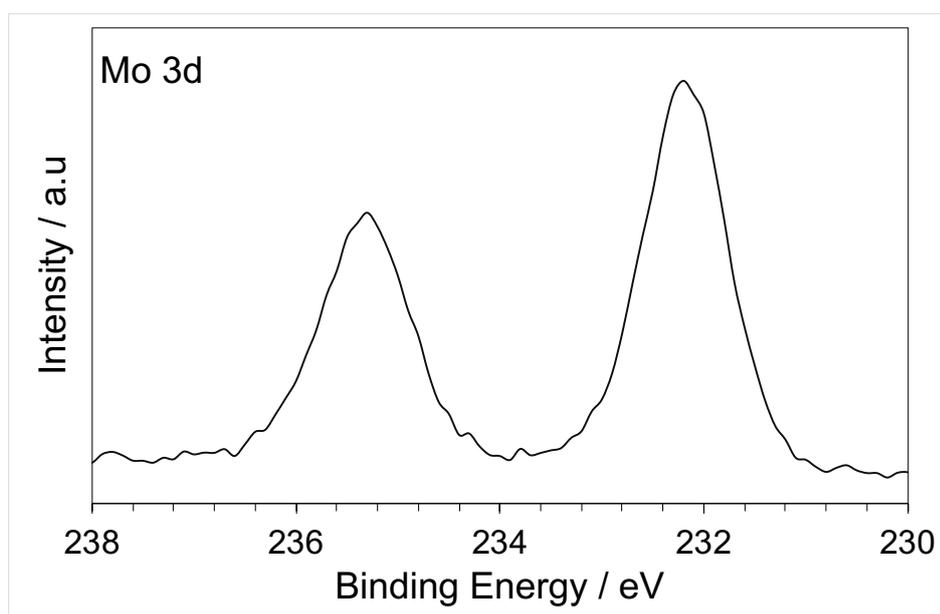
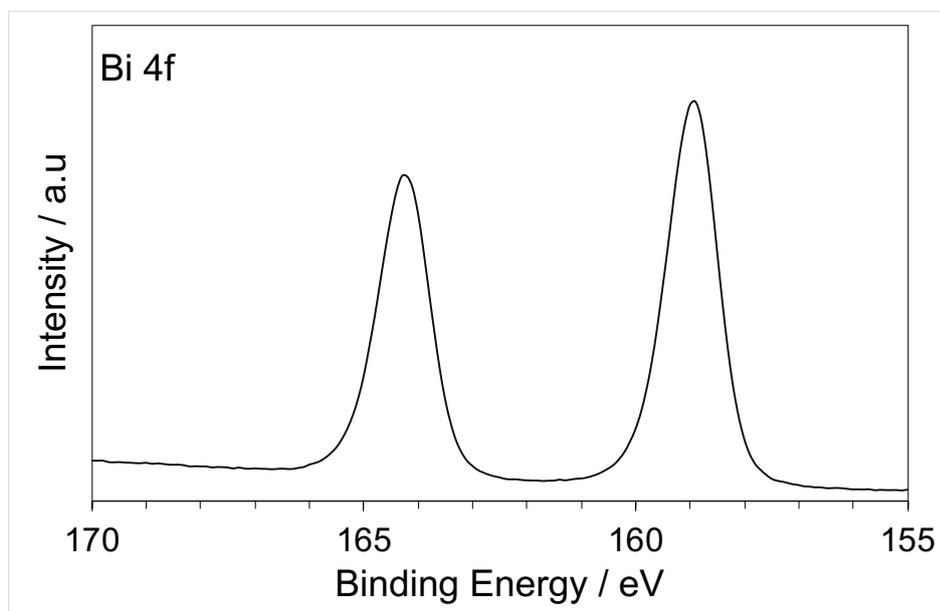
**Figure S4** X-ray photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 6.



**Figure S5** X-ray photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 6 after calcination at 500 °C.



**Figure S6** X-ray photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 8.



**Figure S7** X-ray photoelectron spectra for the Bi 4f, Mo 3d and O1s regions of the bismuth molybdate catalyst hydrothermally synthesized at pH 8 after calcination at 500 °C.