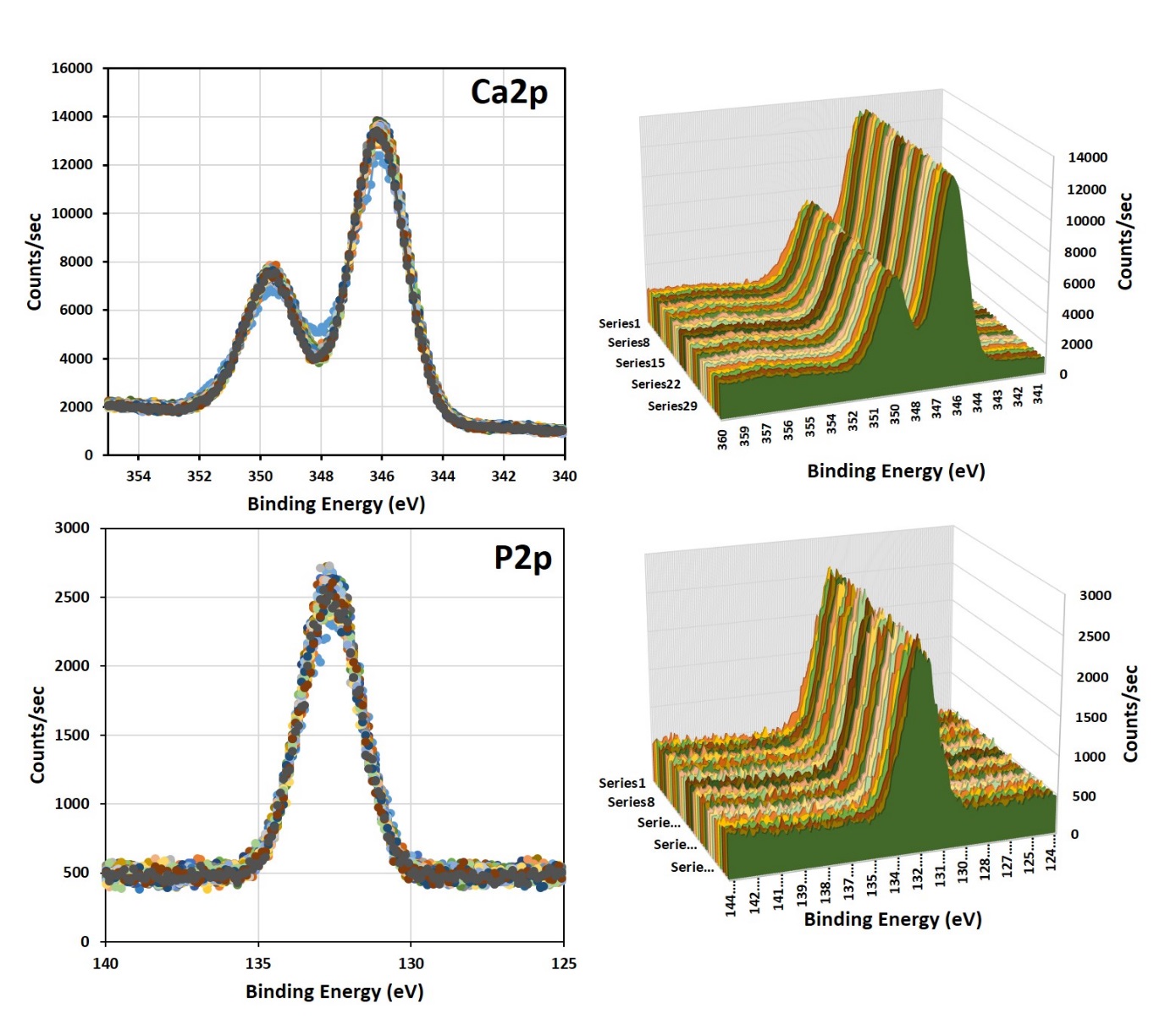
# Sulfur-bearing monazite-(Ce) from the Eureka carbonatite, Namibia: oxidation state, substitution mechanism, and formation conditions

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**Supplementary figures**



**A**

**B**

**C**

0

1000

2000

3000

4000

5000

6000

7000

158

160

162

164

166

168

170

172

174

**Counts/sec**

**Binding Energy (eV)**

**S2p**

***Supplementary figure S1:*** *(A-B) XPS binding energy spectra for a single crystal of fluorapatite rastered with an Ar+ beam over 31 cycles with XPS after each cycle. (A) Spectra for Ca 2p electrons. (B) Spectra for P 2p electrons. (C) Spectra for S 2p electrons in FeSO4.2H2O rastered over 10 cycles with XPS after each cycle. In no case is there any change in chemical shift, demonstrating no reactions are induced by the Ar+ beam.*

**Supplementary figure S2:** A cross-plot of Fe and S LA ICP MS data from S-bearing monazite analyses indicating no clear correlation between the two elements. Elevated Fe contents can be accounted for by the presence of Fe oxides associated with the S-bearing monazite