

Title: Investigation of the (100) and (110) Surfaces of $\text{Li}_2\text{B}_4\text{O}_7$

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Abstract: While the overall combined occupied and unoccupied density of state apparent from photoemission and inverse photoemission shows superficial agreement with the calculated bulk band structure, there are clear indications that the surface affects the observed electronics structure. Angle resolved photoemission of $\text{Li}_2\text{B}_4\text{O}_7$ (110) and (100) surfaces show that the valence band is dominated by several a relatively flat, nearly dispersionless bands. Investigation of the empty states of the same surfaces via inverse photoemission indicates more dispersion along with some noteworthy surface state features. From light polarization dependent synchrotron based photoemission measurements, the (100) surface termination of $\text{Li}_2\text{B}_4\text{O}_7$ is seen to be significantly more polar than the (110) surface termination, although the accepted dipole orientation of this pyroelectric crystal is along (001). Consistent with the surface termination, the surface photovoltaic charging at the (100) surface is significantly greater than observed at the (110) surface.