

Impedance measurements were used to evaluate the relative band edge positions of single crystal p-CuInSe<sub>2</sub> electrodes in aqueous 0.1M K<sub>2</sub>SO<sub>4</sub> solution by measuring the extrapolated flat-band potentials,  $V_{fb}$ . We find that  $V_{fb}$  can be shifted by oxidation and reduction of the electrode surface and this observation was verified by chopped light current-potential measurements. The surface state density distribution responsible for this shift was evaluated and found that it is located at 0.43 eV above the valence band with a peak density of  $3 \times 10^{-14} \text{ eV}^{-1} \text{ cm}^{-2}$  and it could be removed by electrochemical reduction.