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**STM/STS Study of  $\text{Li}_x\text{CoO}_2$  Single Crystals** KATSUYA IWAYA, TAKETOSHI MINATO, Tohoku University, KIYOTAKA MIYOSHI, JUN TAKEUCHI, Shimane University, YOUSOO KIM, RIKEN, TARO HITOSUGI, Tohoku University, TOHOKU UNIVERSITY COLLABORATION, RIKEN COLLABORATION, SHIMANE UNIVERSITY COLLABORATION — We have performed low temperature scanning tunneling microscopy/spectroscopy (STM/STS) measurements on  $\text{Li}_x\text{CoO}_2$  ( $x=0.66$ ) single crystal surfaces. A (1x1) hexagonal lattice was clearly observed and found to be moved by changing bias-voltage polarity, indicating that this could be associated with Li ions on the surface. Under the (1x1) hexagonal lattice, we imaged almost randomly distributed bright dots that were strongly dependent on bias-voltage, with insulating spectroscopic features. Different area on the surface showed a (2x2) hexagonal lattice that could be related to an ordering of  $\text{Co}^{3+}$  and  $\text{Co}^{4+}$  ions. These results suggest the electronic structure of  $\text{Li}_x\text{CoO}_2$  surface is inhomogeneous possibly due to segregation of Li ions.

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