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**Electron irradiation induced oxygen ordering in YBCO twin-free crystals.** H. W. SEO, Q. Y. CHEN, M. N. ILIEV, C. WANG, WEI-KAN CHU, Texas Center for Superconductivity at University of Houston, U. WELP, Argon National Laboratory — Oxygen ordering in CuO chain plane of YBCO is interesting topic because the distribution of oxygen, or the length of chain-fragments, plays an important role in carrier-doping of the CuO<sub>2</sub> plane; longer chain-fragments are more effective in hole doping and result in higher T<sub>c</sub> under the same overall oxygen stoichiometry. In this presentation, we report on the low energy electron irradiation effects in twin-free oxygen deficient YBCO single crystals via comparative Raman spectroscopy studies of electron irradiated and non-irradiated areas at room temperature. We observed that low energy electrons heal the existing point defects of CuO chains and enhances oxygen ordering of twin-free but oxygen deficient YBCO. The comparison of the polarized Raman spectra from non-irradiated and irradiated areas provides clear indications of extended average length of the chains without changing the overall oxygen content.

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