

Abstract Submitted
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Nano-structuring on the surface of high T_c-superconductors by STM&AFM KAZUTO HIRATA, National Institute for Materials Science, TADASHI MACHIDA, SHUICHI OOI, MINORU TACHIKI, National Institute for Materials Science, TAKASHI MOCHIKU — We demonstrate local insulation on a cleaved surface of Bi-2212 single crystals using a local anodic oxidation by a atomic force microscope (AFM) and a scanning tunneling microscope (STM) for the first time. We have investigated the electrical properties of the modified region by using an STM-assisted near-field microwave microscope. From the experimental observations, we conclude that the modified region becomes an insulator with an associated dielectric loss locally. Varying the applied bias-voltage and the scanning speed can control the protrusion height and the line width of the regions. This provides a potential technique for reproducibly fabricating high temperature superconducting devices with stable electronic characteristics.

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