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**VTSLM reveals Current Distribution around Features in Striated YBCO** P. SELBY, C. KHANAL, L. B. WANG, C. KWON, Department of Physics and Astronomy, California State University Long Beach — Variable Temperature Scanning Laser Microscopy (VTSLM) has revealed current bottlenecks in striated superconducting tapes. Our goal is to check the current distribution and see if the striations play a role. Each sample is first given a steady current and varied temperature to determine its transition temperature (for YBCO, usually 90K +/- 4K). Since the transition temperature has a dramatic change in resistance (from normal metal to superconductor in span of 1K), local heating with the scanning laser evokes measurable voltage change. We scanned the laser back and forth across the sample taking smaller and smaller steps to increase resolution. After six samples (three each of a particular geometry) were tested, current patterns emerged. Current bottlenecks, or greater current density due to physical features of sample, are evident in the following locations: near gaps in striations, near visible features in material (blemish or scratch), and where two or more channels merge into one channel (due to blocked channel.) We conclude that the current bottlenecks are the main causes for reducing the current carrying capability in striated YBCO samples.

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