

Abstract Submitted
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High spatial resolution thermal imaging of metallic nanowires using a scanning fluorescent nanoprobe. ELIKA SAIDI, JEROME LESUEUR, LIONEL AIGOUY, LPEM / CNRS / ESPCI / France — We have studied the temperature increase of metallic nanowires excited by an electrical current. The measurements have been performed using a recently developed scanning thermal microscope that uses a small fluorescent nanocrystal glued at the end of an atomic force microscope tip as a nanoscale sensor. With this system, we have been able to observe the heating of 100nm wide titanium nanowires deposited on an oxidized silicon substrate. By studying wires of different geometries, we have found that the thickness of the interfacial silicon dioxide layer has a strong influence on the heating and the heat dissipation phenomena in the wires. In addition, we have also been able to observe the heating of microwires on which defects have been created by electron beam lithography. A strong temperature increase is visible in the vicinity of the defects where the electrical current density is the highest.

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