

Registration for the Spring-Meeting of the
German Physical Society
from 27.03. to 31.03.2006
in dresden

Negative differential resistance and nonclassical capacitive behavior in networks of metal clusters — •HUIJING ZHANG, DIRK MAUTES, and UWE HARTMANN — Institute of Experimental Physics, University of Saarbrücken, P. O. Box 151150, D-66041 Saarbrücken

Monolayers of small metal clusters of type $\text{Au}_{55}[\text{P}(\text{C}_6\text{H}_5)_3]_{12}\text{Cl}_6$ were investigated with a low-temperature ultrahigh vacuum scanning tunneling microscope. Apart from the usual charge-quantization phenomena, such as Coulomb blockade and staircase, negative differential resistance was observed by performing measurements at distinct locations on the cluster layers. The latter phenomenon can be understood from a "gate" effect caused by neighboring clusters and involving a nonclassical behavior of the capacitances generated by the nanoscale metal particles.

Location: dresden
Date: 27.03.—31.03.2006
Section: Surface Physics
Subject: Particles and clusters
Presentation: Talk
Email: h.zhang@mx.uni-saarland.de
Membership: with DPG registered society: DPG