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Title:	Voltage induced local hysteretic phase switching in silicon
Authors:	Sekhon, J.S. (/jspui/browse?type=author&value=Sekhon%2C+J.S.) Aggarwal, L. (/jspui/browse?type=author&value=Aggarwal%2C+L.) Sheet, G. (/jspui/browse?type=author&value=Sheet%2C+G.)
Keywords:	Voltage Hysteretic phase Spectroscopy
Issue Date:	2014
Publisher:	American Institute of Physics
Citation:	Applied Physics Letters, 104(16)
Abstract:	We report the observation of dc-bias induced 180° phase switching in silicon wafers by local-probe microscopy and spectroscopy. The switching is hysteretic and shows remarkable similarities with polarization switching in ferroelectrics as seen in piezoresponse force microscopy (PFM). This is always accompanied by a hysteretic amplitude vs. voltage curve which resembles the "butterfly loops" for piezoelectric materials. From a detailed analysis of the data obtained under different environmental and experimental conditions, we show that the hysteresis effects in phase and amplitude do not originate from ferro-electricity or piezoelectricity. This further indicates that mere observation of hysteresis effects in PFM does not confirm the existence of ferroelectric and/or piezoelectric ordering in materials. We also show that when samples are mounted on silicon for PFM measurements, the switching properties of silicon may appear on the sample even if the sample thickness is large.
URI:	<a href="https://aip.scitation.org/doi/10.1063/1.4873386">https://aip.scitation.org/doi/10.1063/1.4873386</a> ( <a href="https://aip.scitation.org/doi/10.1063/1.4873386">https://aip.scitation.org/doi/10.1063/1.4873386</a> ) <a href="http://hdl.handle.net/123456789/2976">http://hdl.handle.net/123456789/2976</a> ( <a href="http://hdl.handle.net/123456789/2976">http://hdl.handle.net/123456789/2976</a> )
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