Seminários de Física

CFUM, LIP-Minho, DF

Quarta-Feira, 30 de Maio às 14:30h
Anfiteatro de Física, Escola de Ciências, Campus de Gualtar

Resistive switching in ferroelectric based structures

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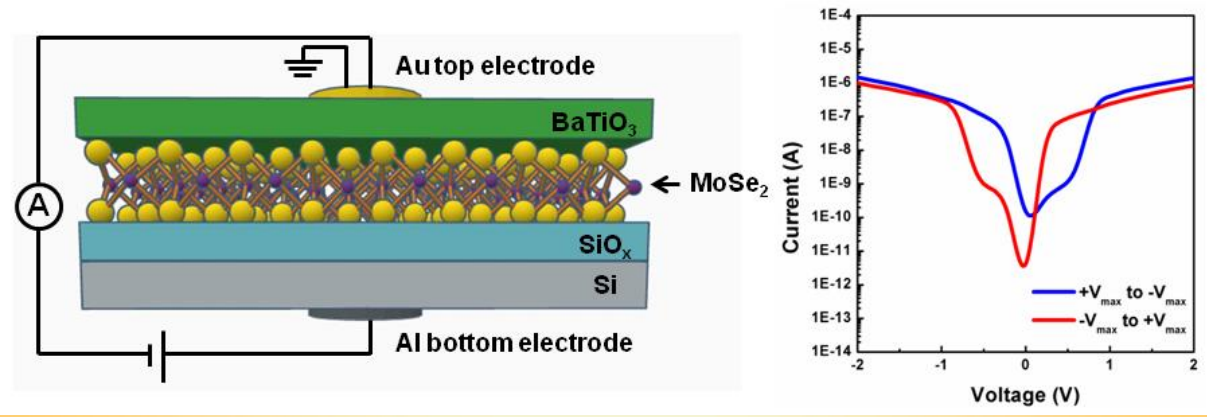

Figure 1. Schematic representation of a ferroelectric based device and I-V response.

Resumo: Resistive random access memories (RRAMs) have been considered one of the potential candidates for next-generation non-volatile memories because of their remarkable characteristics such as low power consumption, high operation speed, high integration density and nondestructive readout. The intrinsic physical phenomenon behind RRAMs is resistive switching (RS) and a large variety of materials such as perovskite-type oxides, ferroelectric oxides and binary transition metal oxides has been extensively investigated. However, RS effects in most of these materials are based on a certain type of defect mediated phenomenon. On the other hand, ferroelectric based devices emerge as an exciting alternative for RRAMs because the low and high resistance states can be tuned via intrinsic switching of ferroelectric polarization without invoking the charged defect migration.

In this talk, I will present our last achievements in ferroelectric based structures for resistive random access memories. The relation between the ferroelectric polarization and the RS effect will be discussed as well as the mechanism underlying the RS effect in these structures. Moreover, I will give an outlook into promising further research and possible future applications of ferroelectric based devices.