

Memristors:

- the missing non-linear passive two-terminal electrical component relating electric charge and magnetic flux linkage.
- Resistance depends on the history of current that has flown through it, and this resistance is remembered when the device is shut off and turned on again.
- Thermodynamics says no unfortunately.

Original def:

- $M(q(t)) = V(t)/I(t)$.
- I believe currently when the word "memristors" is used it really means memristive/memristor-ish.

TITANIUM!>!?!?:

- two titanium dioxide layers connect two electrodes, one is titanium the other platinum.
- One layer is slightly depleted of oxygen, these vacancies act as charge carriers
- depleted layer has lower resistance than other layer.
- Vacancies drift when electric field is applied, this changes the boundary between high and low resistance layers.
- The drift is reversible by changing the direction of the current
- the resistance as a whole for the device is dependent on the current through the device.
- This breaks down if both layers are not contributing to resistance, resulting in a constant resistor until the current's direction is reversed.

Properties:

- by definition a memristor has to be non-volatile
- also solid state.
- They could be arranged to create a crossbar switch which could be used instead of transistors to create the basic logic gates.