# Differential Conductance of Magnetic Tunnel Junctions


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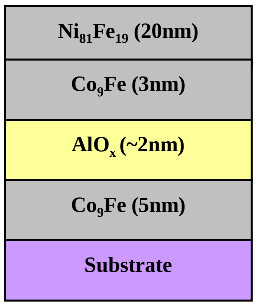
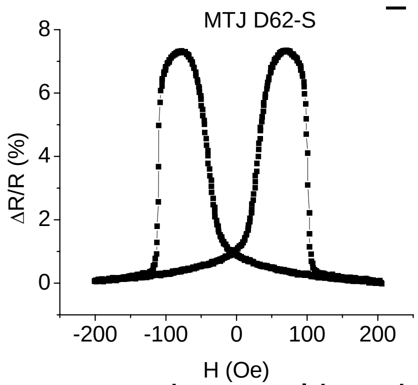
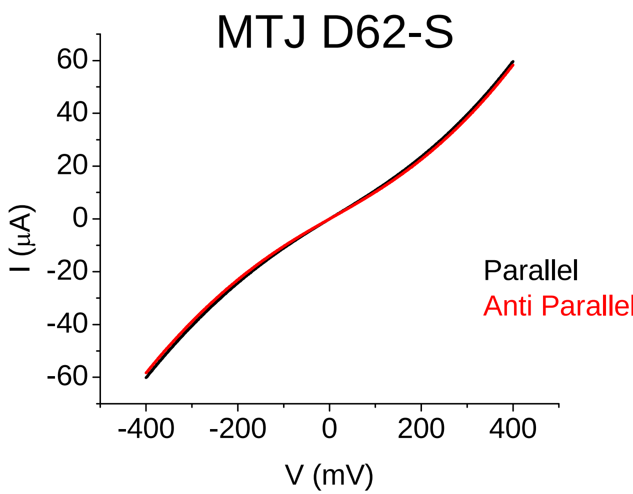
Magnetic tunnel junctions (MTJs) are comprised of two ferromagnetic layers separated by a thin insulating tunnel barrier. They are seeing widespread use in industry in magnetic sensor and data storage applications. Magnetic tunnel junctions are being fabricated in order to understand the bias voltage dependence of these devices and to use as spin injectors and detectors to measure spin diffusion lengths.

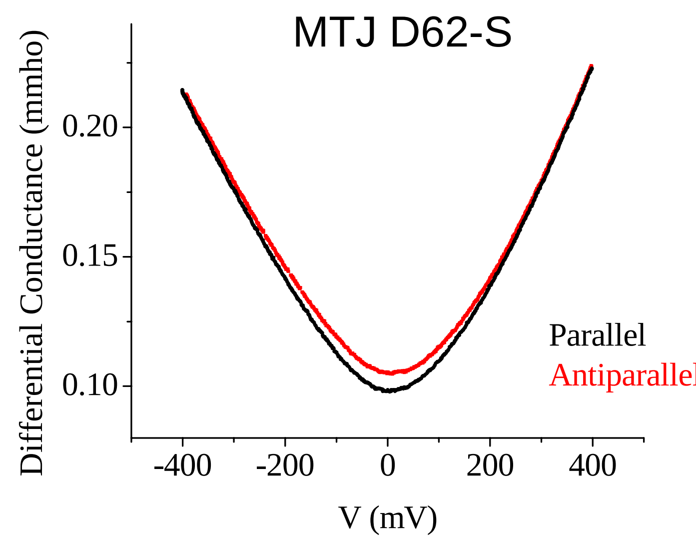



MTJ structure




Magnetic tunnel junctions show a variable resistance as a function of magnetic field.




The IV curves are non-linear and the dI/dV curves are consistent with the Simmons model of a parabolic differential conductance.