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Magnetic properties of Co-Rh and Ni-Rh nanostructures JAVIER GUEVARA, Escuela de Ciencia y Tecnología, Universidad de San Martín, Argentina and Dept Física, CAC-CNEA, Argentina, TRISTANA SONDON, Dept Fisica, CAC-CNEA, Argentina and Instituto Sabato, UNSAM, Argentina, ANDRES SAUL, CRMCN-CNRS, Campus de Luminy Case 913, 13288 Marseille Cedex 9 France — We study the evolution of the magnetic properties of Co-Rh and Ni-Rh nanostructures (free-standing monolayers and wires) on Rh content (x). It is known that dimensionality affects the magnetic properties of the materials. Rh is non magnetic in bulk, but shows magnetic order as free-standing monolayer or nano- wire, being $1.03\mu_B$ and $0.26\mu_B$ the corresponding magnetic moments, calculated by using the *abinitio* Wien-2k code. In the case of $Co_{1-x}Rh_x$ and $Ni_{1-x}Rh_x$ wires, the evolution of the Rh magnetic moment is similar for both cases, being enhanced with respect to pure Rh wire value and reaching the largest values at x=.5 ($1.36\mu_B$ and $1.31\mu_B$ respectively). For $x > 0.5$ all the magnetic moments fall. For $x < .5$ the Co and Ni magnetic moments reach values larger than the corresponding pure wire and than their saturation magnetic moments. In the case of mixed monolayers the Rh and Ni magnetic moments are not enhanced as Co or Ni content increases, however Co μ is enhanced without crossing its saturation value. By alloying with Co or Ni, Rh wires enhanced their magnetic moments, while mixed monolayers' Rh magnetic moments are not enhanced.

Javier Gueva
Escuela de Ciencia y Tecnología, Universidad de San Martín, Argentina and Dept Física, CAC-CNEA, Argenti

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