

OPTICAL PROPERTIES AND ELECTRONIC STRUCTURE OF Ni–Co ALLOYS

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S u m m a r y

The optical constants n and χ of the Ni–Co alloys (5, 10, 20, 30, and 40 at.% Co) are measured in a wide spectral region from 0.254 to 1.24 μm (1.0 – 4.89 eV) at room temperature. From the measured n and χ values, other optical characteristics including the optical conductivity $\sigma = n\chi\nu$ (ν is the frequency of light) are calculated. The optical conductivity dispersion curves $\sigma(h\nu)$ of the Ni–Co alloys are interpreted in terms of a theoretical model for the electronic structure of pure nickel. The analysis of the results showed that the electronic states in the alloys are similar to those in pure Ni and Co forming an impurity band of 1.4 – 1.8 eV above the Fermi level.