

Abstracta

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Trabalhos Aceitos para Publicação

A077-97 à A081-97

[A077.97] "Erbium Luminescence in a-Si:H"

L. R. Tessler, A. R. Zanatta

We have prepared a-Si:H with erbium impurities by co-sputtering. Efficient photoluminescence at 1.54 μm was observed in as-deposited samples. The maximum luminescence efficiency η was found for an Er/Si concentration ~ 2 at. % in samples prepared under low cathode bias. These samples have columnar structure and have ~ 3 at. % O/Si. Annealing under oxygen atmosphere at 300 $^{\circ}\text{C}$ can increase η at room temperature by a factor 3 and η at 77 K by a factor 5. The optimum erbium concentration is two orders of magnitude higher than in ion implanted crystalline silicon or in glasses. Hydrogen concentration is a fundamental parameter to obtain efficient luminescence. This material is a good candidate for Er^{3+} based photonic devices.

Journal of Non-Crystalline Solids 227-230, Part 1, 399-402, Mai 1998

[A078.97] "Giant Magnetoimpedance in Soft Magnetic Amorphous and Nanocrystalline Materials"

M. Knobel

Recent results on giant magnetoimpedance (GMI) are reviewed. After a brief outline on the existent theories which explain the phenomenon, a general overview of experimental data on amorphous wires and ribbons is given. Furthermore, the GMI effect is observed in soft magnetic crystalline and nanocrystalline samples, and few investigations done in different systems are presented. To conclude, a recently observed effect in amorphous materials, the so-called magnetoimpedance aftereffect, is reported and explained as a consequence of the relaxation of the circular magnetic permeability.

Journal de Physique IV France 8, 213-220, 1998

[A079.97] "Electronic Structure of Nitrogen-Carbon Alloys (a-CNX) Determined by Photoelectron Spectroscopy"

S. Souto, M. Pickholz, M. C. dos Santos, F. Alvarez

The electronic structure of nitrogen-containing diamond-like films prepared by sputtering was determined by photoelectron-spectroscopy (PES). The N1s core-level spectra are constituted by two peaks at 400.5 eV and 398.2 eV associated with substitutional N sp^2 in aromatic rings and N bonded to C sp^3 , respectively. On increasing N the top of the valence band (VB) suffers profound changes. The new features are identified by a comparison of the experimental spectra with theoretically calculated density of states (DOS) of nitrogen-containing graphite and C_3N_4 structures.

Physical Review B 57 (4), 2536-2540, Jan 1998

[A080.97] "Weighted Oscillator Strengths and Lifetimes for si VII Spectrum"

L. H. Coutinho, A. G. Trigueiros

The weighted oscillator strengths (gf) and the lifetimes presented in this work were carried out in a multiconfiguration Hartree-Fock Relativistic (HFR) approach. In this calculation, the electrostatic parameters were optimized by a least-square procedure, in order to improve the adjustment to experimental energy levels. This method produces gf values that are in better agreement with intensity observations and lifetimes values that are closer to the experimental ones. In this work we revised all the experimentally known electric dipole Si VII spectrum lines.

Astrophysical Journal Supplement Series 115 (2), 315, 1998

[A081.97] "Rosenfeld-Prigogine's Complementary of Descriptions in the Context of Informational Statistical Thermodynamics"

R. Luzzi, J. G. Ramos, A. R. Vasconcellos

Within the framework of Informational Statistical Thermodynamics we consider the case of a particular dissipative dynamical systems, namely, a system of harmonic oscillators weakly interacting with a thermal bath. The informational entropy and informational-entropy production are obtained. In terms of them we derive the information gain in alternative pictures and a Rosenfeld-like complementarity principle between micro-and macro-descriptions. This complementarity is related to a kind of measure of the incompleteness of both descriptions and to Prigogine's theory of irreversible processes. The fundamental role of the universal Boltzmann constant for the characterization of this complementarity is discussed.

Physical Review E 57 (1), 244-251, Jan 1998

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