

Abstracta

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Trabalhos Aceitos para Publicação

A034-98 à A039-98

Trabalho Aceito em Congresso

C007-98 à C011-98

ACCEPTED PAPERS FOR JOURNAL PUBLICATION

A 034-98 In_{0.49}Ga_{0.51}P Growth on Pre-patterned GaAs Substrates by Chemical Beam Epitaxy.

de Castro, M. P. P. , Frateschi, N. C. , Bettini, J. and de Carvalho, M. M.

We present an investigation on the growth of lattice matched InGaP on patterned GaAs substrates by Chemical Beam Epitaxy. An experimental analysis of the growth on planes [100] and [111]A as a function of growth temperature and pattern dimension is presented. A simple surface kinetics model is proposed allowing the determination of diffusion length, incorporation time and free species life-time on both planes. Incorporation on planes [111]A reduces with increase in temperature and there is indication of a relationship between evaporation time and nucleation sites on [111]A planes.

Journal of Crystal Growth 193 (4), 510-515, 1998

A 035-98 The Permittivity in the Huttner-Barnett Theory of QED in Dielectrics.

Dutra, S. M. and Furuya, K.

Huttner and Barnett's interpretation of the function they call $\epsilon(\omega)$ as the dielectric permittivity is crucial in practical applications of their theory. We show explicitly that $\epsilon(\omega)$ is the permittivity but that their microscopic model can only describe certain types of permittivity.

Europhysics Letters 43 (1), 13-16, 1998

A 036-98 Hard Hydrogenated Carbon Films with Low Stress.

Lacerda, R. G. and Marques, F. C.

Analysis of hard a-C:H films with low stress prepared by methane plasma decomposition is reported. Films with hardness as high as 14 GPa and stress as low as 0.5 GPa were obtained. These films have high Raman I_d/I_g ratio of 1.1 and small Tauc's band gap of 0.4 eV. This letter also supplies a strong evidence that the subimplantation deposition model, used to explain the formation of ta-C and ta-C:H films, is also valid for a-C:H films deposited by methane plasma decomposition. It is proposed that the rigidity of the films is basically provided by a matrix of dispersed cross-linked sp² sites, in addition to the contribution of the sp³ sites.

Applied Physics Letters 73 (5), 617-619, 1998

A 037-98 Stress and Thermomechanical Properties of Amorphous Hydrogenated Germanium Thin Films Deposited by PECVD. Marques,

F. C. , Wickboldt , P. , Pang, D. , Chen, J. H. and Paul, W.

Stress measurements of a-Ge:H thin films deposited by PECVD using a large variety of deposition conditions are reported. It was observed that the stress of the films is strongly related to their structure. Tensile films are usually porous or have many defects, while compressive films are usually homogeneous. High quality films are always compressive. A strong correlation of the stress in the films with the unbonded hydrogen concentration was observed, which may explain the origin of the compressive stress. There was no systematic or consistent link between the stress and the bonded hydrogen content or the deposition rate. The thermal expansion coefficient and the elastic constant were determined for high quality films.

Journal of Applied Physics 84 (6), 3118-3125, 1998

A 038-98 Extended Analysis of the Three-Times Ionized Krypton,

Kr IV. Reyna Almandos, J G. , Bredice, F. , Raineri, M. , Gallardo, M. and Trigueiros, A. G.

The spectral analysis of the three-time ionized krypton, Kr IV, was extended to include three, twelve, eighteen, and twenty

new level values of the configurations 4s24p25s, 4s24p24d, 4s24p26s, 4s24p25d, and es24p25p respectively. Five known level values of the even configurations were redesigned and four levels were rejected. The observed configurations were theoretically interpreted by means of Hartree-Fock relativistic (HFR) calculations and least-squares fit of the energy parameters to the observed levels. Rydberg series configuration interactions have also been included in the calculations.

Journal of Physics B: Atomic, Molecular and Optical Physics 31 (14), 3129-3136, 1998

A 039-98 Weighted Oscillator Strengths and Lifetimes for the Si III Spectrum.

Callegari, F. and Trigueiros A. G.

The weighted oscillator strengths (gf) and the lifetimes for Si III 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-squares 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 lifetime values that are closer to the experimental ones. In this work we presented all the experimentally known electric dipole Si III spectral lines.

The Astrophysical Journal: Supplement Series 119 (2), 181-188, Dez 1998

ACCEPTED PAPERS FOR CONFERENCE PRESENTATION

C 007-98 A Conjecture on Centauro Species.

Menon, M. J.

It is argued that Centauro events observed in cosmic ray experiments may be characteristic of only pp and not pp interactions.

In: Proceedings of VI Hadron Physics, Florianópolis, SC, 16-21 Mar 1998, Mai 1998

C 008-98 Analyticity and crossing at the elementary level in elastic hadron scattering.

Carvalho, P. A. S., Martini, A. F. , Menon, M. J. and Motter, A. E.

We suggest the Glauber multiple diffraction theory as a possible scenario for the construction of analytic properties of the hadronic amplitudes in terms of analytic properties for the elementary ones. Making use of empirical information on the eikonal form pp and pp scattering data and by assuming analyticity, crossing and unitarity at the constituent level, we introduce crossing -even and -odd parametrizations for the elementary amplitudes in the forward direction. This leads to novel analytic parametrizations for the elementary cross sections as function of the energy.

In: Proceedings VI Hadron Physics, Florianópolis, SC, 16-21 Mar 1998, Mai 1998

C 009-98 Semiempirical Extraction of Elementary Amplitudes from Experimental Data on Elastic Hadron Scattering.

Carvalho, P. A. S. , Martini, A. F. and Menon, M. J.

Making use of an empirical determination of the eikonal in the momentum transfer space and several parametrizations for the form factors, we calculate the elementary (constituent-constituent) amplitudes in the context of the Glauber multiple diffraction theory. The results for the corresponding elementary differential cross sections present a diffractive pattern in the momentum transfer space.

Proceedings VI Hadron Physics , Florianópolis- SC, 16-21 Mar 1998, accepted on May 1998.

C 010-98 The Spectroscopy Study of Highly Ionized Ions Produced by Electrical Discharges in Gases.

A. G. Trigueiros

We present a review in the field of atomic emission spectroscopy of gases and metals in the vacuum ultraviolet (VUV) region. A theta-pinch discharge is used as a spectroscopic light source to obtain spectra of inert gases. Usual operating parameters are: 20kV, 100mA and 7.2 m F. Spectra of metals are also studied using different kinds of experimental set-ups. A hollow cathode is operated in connection with the theta-pinch. The sputtering of the hollow cathode electrode produces metal vapour, which is mixed with hydrogen gas in the theta-pinch tube. The electrical discharges gives information on the metal spectrum. To study spectra of alkali-metals we replace the hollow cathode by an evacuated glasstube in which the metal vapour is produced using an arc-discharge. The emitted radiation is detected by a 3m normal-incidence spectrograph in the wavelength region fo 300-2000 Å. Recorded spectra are exposed on short-wave region emulsion plates. Wavelengths and energy levels are determined experimentally. The analysis of the spectra are supported by extrapolation through the isoelectronic sequence and Hartree-Fock calculation. Weighted oscillator strengths (gf) and lifetimes are also determined in a Hartree-Fock relativistic (HFR) approach. In this calculation, the electrostatic parameters are optimized by a least-squares 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 lifetime values that are closer to the experimental ones. Invited lecture (45 minutes) to be presented in the 19th Summer School and Int. Symposium on the Physics of Ionized Gases, 19th SPIG.

19th Summer School and Int. Symposium on the Physics of Ionized Gases, SPIG, Yugoslavia, Aug 31-Sep 4 1998, accepted on May 1998.

C 011-98 A Review of the Atomic Emission Spectroscopy in Brazil and Argentina.

Luna, F. R. T., Callegari, F., Coutinho L. H., Siems, A., Tomaselli, J., Trigueiros, A. G. , Cavalcanti, G. H., Reyna Almandos, J. G. and Gallardo, M.

We presented the activities of the Laboratorio de Física Atômica e Molecular in the Field of Atomic Emission Spectroscopy. The laboratory study electrical discharges in gases by; mean of a Theta-Pinch as a spectroscopy light source. Spectra of Argon, Krypton and Xenon have been obtained and analyzed. Spectra of alkaline metals have been also produced and analyzed. The experiments are supported by Hartree-Fock calculations of the energy parameters of the electronic configurations. We reported our results published in the last two years.

III Physicist's Int. Meeting in the INKA region, Cusco- Perú, 15-20 Jun 1998, accepted on May 1998.

Abstracta

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