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October 23 & 24, 2023

El Oued - Algeria



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December 19 & 20, 2023

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MEE'2023



THANK YOU

The Second International Conference on Materials, Energy & Environment (MEE'2023) El Qued, Algeria October 13-14, 2023

MEE'2023







How to improve heat transfer between two solids in rough contact - numerical study

RESULTS AND DISCUSSIONS

INTRODUCTION

METHODS & MODELING

System Presentation

Journal Membership

For 2014, the annual subscription rate for individuals is \$500 for US and \$550 for non-US. The Journal is published 12 times a year, with 10 issues for the individual issue and 2 issues for the special issue. The subscription rate for libraries is \$1,200 for US and \$1,300 for non-US. The subscription rate for institutions is \$1,500 for US and \$1,600 for non-US. The subscription rate for institutions is \$1,500 for US and \$1,600 for non-US. The subscription rate for institutions is \$1,500 for US and \$1,600 for non-US.

Figure 1 Effect of temperature on the correlation coefficient of the TCC

Figure 8. Comparison of individual variance calculated in the FSC.

Discussions of Results

Figure 1 Case for the...
the...
...
...

Figure 4 shows that the thermal conductance of the thermal conductive paste is

Figure 1 illustrates the
the TLT component of the
the TLT of the system
the TLT of the system

Make Developer / Experiment Procedure

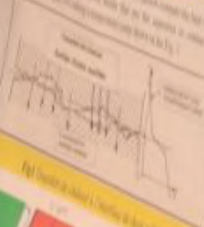


Fig. 10. Change in channel & 100-year depth water

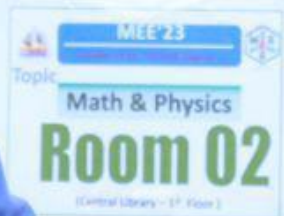


ج الواء

Department of Physics

The Second International Conference on **M**aterials, **E**nergy & **E**nvironment

(MEE'2023)





The Second International Conference on Materials Science & Environment
October 23-24, 2023, Algiers, Algeria

Manuscript ID: Env-P-022

Antimicrobial degradation with high efficiency through biosynthesis of CN nanocomposites

YOUSSEF Soudani, SALME Chame, HENDI NEI, Mohamed LAFFENTINEF, Fatma

Department of Physics, Faculty of Sciences, University of Algiers, Algiers, Algeria

ABSTRACT

The aim of this work is to study the antimicrobial activity of CN nanocomposites against different microorganisms. The nanocomposites were synthesized by the biosynthesis of CN nanocomposites using a green synthesis method. The results show that the nanocomposites have a high efficiency in antimicrobial degradation.

INTRODUCTION

The aim of this work is to study the antimicrobial activity of CN nanocomposites against different microorganisms. The nanocomposites were synthesized by the biosynthesis of CN nanocomposites using a green synthesis method. The results show that the nanocomposites have a high efficiency in antimicrobial degradation.

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MATERIALS & METHODS

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Relativistic Quantum Contribution of Binary Ion-Electron Collisions in the Width of Isolated Lines: Lyman- α Case for Hydrogenic Ions in Plasma

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ABSTRACT

The profile reflects the physical properties of the plasma. The Doppler and electronic contributions can be at the one of the line while the other effect is in the wings. The analysis of the electronic contribution is necessary for most astrophysical observations, and can also provide useful indications on the conditions and mechanisms in the plasma. In this work, we have developed an accurate of the relativistic contribution of binary ion-electron collisions in the width of isolated lines, when the fine structure of the emitting ion is neglected. We have studied the amplitude of relativistic electronic operation of the dipole radiation of an ion immersed in plasma, within the framework of the impact approximation and the semi-classical approximation. In this operator's calculation we used an effective potential. This potential is considered to include both the diffraction (quantum) and the screening field due to the amplitude of the relativistic collision operator is developed for hydrogenic ion lines in plasma and compared with Aliev's result which taking into account the Coulomb interaction between the emitting ion and the plasma electrons.

INTRODUCTION

Such work has been carried out to calculate the broadening of isolated lines in a plasma [1,2,3], using the impact approximation for electrons in its semi-classical version, and the quasi-static for the ions [4,5,6]. In many types of ions, a main cause of broadening is the presence of the electric field generated by the electrons, which leads to a varying internal energy levels called the Stark effect.

The work is devoted to the theory of electronic broadening of spectral lines. Our goal has been to provide, to astrophysicists specializing in hot stars and black holes and to physicists who observe the profiles of the spectral lines of astrophysical plasmas, a method which allows the numerical calculation of the width of any isolated line of a hydrogenic ion with precision. We examined the influence of quantum screen, and relativistic effects on the profile width. These effects are presented in a suggested effective potential for the calculation of the electron collision operator. We compared the relativistic and non-relativistic collision operators for different plasma parameters.

METHODS & MODELLISATION

System Presentation

The overall potential is the interaction of an electron or ion with an emitting ion, this potential taking into account the quantum effect:

$$V_{\text{ion}} = -\frac{K_0 Z^2 e^2}{r} (1 - e^{-\lambda_0 r}) K_0 = \frac{1}{4\pi\epsilon_0}$$

The expression for the Debye interaction is given by:

$$V_D = -\frac{K_0 Z e^2}{r} e^{-r/\lambda_D}$$

The Debye screening potential is the potential which takes into account the quantum effect and the electronic screen effect, represented a version as follows:

$$V_{\text{ion}} = -\frac{K_0 Z^2 e^2}{r} (1 - e^{-\lambda_0 r}) e^{-r/\lambda_D} \quad (1)$$

$$\lambda_0 = \frac{4\pi e^2}{k_B T_e} \quad k_B = \frac{9}{8\pi n_e \lambda_D^3}$$

Model Development / Experimental Procedure

Now before the diffraction equation we:

$$F(q) = \frac{1}{2\pi} \int_{-\infty}^{\infty} U(r) e^{-iqr} dr \quad (2)$$

$$\vec{q} \cdot \vec{r} = qr \cos \theta, \quad q = 2k \sin \frac{\theta}{2} \quad (3)$$

$$d\vec{r} = r^2 \sin \theta dr d\theta d\phi \quad (4)$$

By introducing the equations (1), (2) and (3) into the expression (2), we integrate over θ and we find the following formula:

$$F(q) = \frac{2\pi}{q} \int_0^\infty (e^{-\lambda_0 r} - e^{-\lambda_D r}) \sin(qr) r dr \quad (5)$$

We solve the equation:

$$L = \frac{2\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (6)$$

As the calculation of the expression of the electronic collision operator is non-completed, we were able to calculate the collision operator by neglecting the fine structure of the center:

$$\sigma_{\text{ion}} = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (7)$$

RESULTS AND DISCUSSIONS

Results Presentation

After integration, we obtain the final form of the collision operator:

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (8)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (9)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (10)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (11)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (12)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (13)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (14)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (15)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (16)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (17)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (18)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (19)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (20)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (21)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (22)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (23)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (24)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (25)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (26)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (27)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (28)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (29)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (30)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (31)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (32)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (33)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (34)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (35)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (36)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (37)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (38)$$

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$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (40)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (41)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (42)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (43)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (44)$$

$$\sigma_{\text{ion}}(q) = \frac{4\pi}{q} \left[\frac{1}{(1+\lambda_0^2)^{3/2}} - \frac{1}{(1+\lambda_D^2)^{3/2}} \right] \quad (45)$$

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Université Kasdi Merbah Ouargla, Laboratoire LRPFS Faculté des Sciences et de la Technologie et des Sciences de la Matière, Ouargla 34000, Algérie

ABSTRACT

Such effect is one of the mechanisms of broadening the spectral lines in a plasma. It is a quantum effect, as well as, which even affects a gas. It is particularly important in the case of the Lyman- α transition of hydrogenic ions. In this work, we have developed an accurate of the relativistic contribution of binary ion-electron collisions in the width of isolated lines, when the fine structure of the emitting ion is neglected. We have studied the amplitude of relativistic electronic operation of the dipole radiation of an ion immersed in plasma, within the framework of the impact approximation and the semi-classical approximation. In this operator's calculation we used an effective potential. This potential is considered to include both the diffraction (quantum) and the screening field due to the amplitude of the relativistic collision operator is developed for hydrogenic ion lines in plasma and compared with Aliev's result which taking into account the Coulomb interaction between the emitting ion and the plasma electrons.

INTRODUCTION

The profile reflects the physical properties of the plasma. It can be Doppler or Stark effect. Such line broadening has become an important feature of many astrophysical observations, and can also provide useful indications on the conditions and mechanisms in the plasma. In this work, we have developed an accurate of the relativistic contribution of binary ion-electron collisions in the width of isolated lines, when the fine structure of the emitting ion is neglected. We have studied the amplitude of relativistic electronic operation of the dipole radiation of an ion immersed in plasma, within the framework of the impact approximation and the semi-classical approximation. In this operator's calculation we used an effective potential. This potential is considered to include both the diffraction (quantum) and the screening field due to the amplitude of the relativistic collision operator is developed for hydrogenic ion lines in plasma and compared with Aliev's result which taking into account the Coulomb interaction between the emitting ion and the plasma electrons.

METHODS & MODELLISATION

System Presentation

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$$V_{\text{ion}} = -\frac{K_0 Z^2 e^2}{r} (1 - e^{-\lambda_0 r}) e^{-r/\lambda_D} \quad (1)$$

CONCLUSIONS

In a highly ionized plasma of astrophysical interest, the relativistic contribution of binary ion-electron collisions in the width of isolated lines, when the fine structure of the emitting ion is neglected. We have studied the amplitude of relativistic electronic operation of the dipole radiation of an ion immersed in plasma, within the framework of the impact approximation and the semi-classical approximation. In this operator's calculation we used an effective potential. This potential is considered to include both the diffraction (quantum) and the screening field due to the amplitude of the relativistic collision operator is developed for hydrogenic ion lines in plasma and compared with Aliev's result which taking into account the Coulomb interaction between the emitting ion and the plasma electrons.



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Manuscript ID: **MEE-2023-01**

Kinetic study on electrical properties of AZO thin films deposited by DC reactive sputtering in oxygen atmosphere

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ABSTRACT

This work aims to study the effect of oxygen concentration on the electrical properties of AZO thin films deposited by DC reactive sputtering. The films were deposited on Si/SiO₂ substrate at different oxygen concentrations (0%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%). The electrical properties (resistivity, Hall coefficient, carrier concentration) were measured as a function of oxygen concentration. The results show that the electrical properties of the films are strongly dependent on the oxygen concentration. The resistivity decreases and the carrier concentration increases with increasing oxygen concentration. The Hall coefficient also increases with increasing oxygen concentration. The results are discussed in terms of the defect chemistry of the films.

CONCLUSIONS

The electrical properties of AZO thin films deposited by DC reactive sputtering in oxygen atmosphere are strongly dependent on the oxygen concentration. The resistivity decreases and the carrier concentration increases with increasing oxygen concentration. The Hall coefficient also increases with increasing oxygen concentration. The results are discussed in terms of the defect chemistry of the films.

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Manuscript ID: **MEE-2023-02**

COMSOL simulation of the influence of interface states in MOS structures

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ABSTRACT

This work aims to study the effect of interface states on the electrical properties of MOS structures. The simulation was performed using COMSOL Multiphysics software. The results show that the interface states have a significant influence on the electrical properties of the MOS structures. The carrier concentration, resistivity, and Hall coefficient are all affected by the interface states. The results are discussed in terms of the defect chemistry of the interface states.

RESULTS AND DISCUSSION

The simulation results show that the interface states have a significant influence on the electrical properties of the MOS structures. The carrier concentration, resistivity, and Hall coefficient are all affected by the interface states. The results are discussed in terms of the defect chemistry of the interface states.

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Manuscript ID: **MEE-2023-03**

Effects of PVD glancing angle: Comparison of TaN and Zn thin films

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ABSTRACT

This work aims to study the effect of PVD glancing angle on the electrical properties of TaN and Zn thin films. The films were deposited on Si/SiO₂ substrate at different glancing angles (0°, 10°, 20°, 30°, 40°, 50°, 60°, 70°, 80°, 90°, 100°). The electrical properties (resistivity, Hall coefficient, carrier concentration) were measured as a function of glancing angle. The results show that the electrical properties of the films are strongly dependent on the glancing angle. The resistivity decreases and the carrier concentration increases with increasing glancing angle. The Hall coefficient also increases with increasing glancing angle. The results are discussed in terms of the defect chemistry of the films.

RESULTS AND DISCUSSION

The results show that the electrical properties of the films are strongly dependent on the glancing angle. The resistivity decreases and the carrier concentration increases with increasing glancing angle. The Hall coefficient also increases with increasing glancing angle. The results are discussed in terms of the defect chemistry of the films.