

Dedication

To my mother
Un known soldier in our home,
father
It is the greatest love that he holds,
toscience and knowledge,
sisters and brother,
To my teachers and
all friends.

A cknowledgements

At first I would like to thank Allah who gives me the power to complete this work.

I would like to thank Prof. Mubarak DirarAbdalla who patiently and kindly supervised this thesis and who generously gave me many valuable references which were a great help.

Special thanks to Mr.AbdAlsakhiSulieman -Alneelain University Department of physics for assistance given to do the experimental work.

Also thanks to Dr. RawiaabdAlgani who sincerely advised me during my work through this thesis.

Also special thanks to Mr. AlbashierAbdAlgayum and Dr. AmelAbdAlla(Sudan University- Department of physics)

My gratitude is sent to my dear family who patiently and kindly aided me very much throughout this work.

Also thanks were sent to all who helped me.

Abstract

Identification of elements is very important in mineral exploration. The change of conductivity with frequency shows resonance values for different matter. At these values the conductivity is minimum; this resonance frequency is shown experimentally to be related to the matter density and atomic number beside the magnetic field. These empirical relations can be explained theoretically on the basis of new statistical laws derived from plasma equations beside Zeeman Effect law. Mineral Exploration is very important for industry. There are many spectral techniques used for identification of elements. Unfortunately these techniques are complex and expensive. There is a need for simple technique for exploration. This work utilizes simple technique based on electrical conductivity. The experimental work shows variation of conductivity with frequency, with line shape similar to absorption line. There is a minimum frequency for each element, which can be used as a finger print characterizing it. Fortunately this conductivity –frequency relation can be explained on the basis of quantum and statistical physics.

المستخلص

التعرف على المعادن ذات أهمية في كشف المعادن. والتغير في الموصلية مع التردد توضح قيم الرنين لمختلف المواد، عند هذه القيم الموصلية تأخذ قيمة صغرى. تردد الرنين يوضح عمليا علاقة كثافة هذه المواد والرقم الذري بالإضافة الي المجال المغناطيسي. هذه العلاقات البيانية فسرت نظريا على أسس القوانين الإحصائية الجديدة المشتقة من قوانين البلازما وقانون أثرزيمان.

كشف المعادن ذات أهمية في الصناعة. توجد عدة تقنيات طيفية أستخدمت في تعريف المعادن. لسوء الحظ هذه التقنيات معقدة وغالية الثمن لذلك نحتاج لتقنية بسيطة للكشف في هذا العمل أستخدمت تقنية بسيطة أتمدت على الموصلية الكهربائية. العمل التجريبي وضح تغيير الموصلية مع التردد بشكل خطي مشابه لخط الإمتصاص. لأي معدن يوجد أقل تردد أستخدم كبصمة مخصصة له. هذه العلاقة بين التردد والموصلية فسرت على أسس الفيزياء الكمية والإحصائية.

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