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References
الهدف من هذا البحث هو تصميم وتصنيع مرشحات وموهنتان بصرية لبعض الأطوال الموجية في المنطقتين تحت الحمراء والمرئية من الطيف الكهرومغناطيسي.

تم اختيار مادتي أكسيد الخارصين وأكسيد المنجنيز لتصنيع المرشحات والموهنتان في شكل أقراص وذلك بناءً على الفحوصات الطيفية الأولية التي أجريت لهذه المواد.

كما تم اختيار أقراص في شكل أقراص باستخدام طريقة التشكيل بالقواطع، حيث تم تصنيع ثلاثة أنواع من الأقراص، النوع الأول هو خليط من أكسيد الخارصين مع بروميد البوتاسيوم والنوع الثاني من أكسيد المنجنيز مع بروميد البوتاسيوم، حيث تم ضغط هذين النوعين في شكل أقراص مختلفة بتغير التركيز وال السمك معاً. أما النوع الثالث فهو عبارة عن خليط من أكسيد الخارصين وأكسيد المنجنيز وبروميد البوتاسيوم، حيث تم ضغط هذه النوع بتغير السمك.

بناءً على الفحوصات التي أجريت، تم تصميم ثلاثة أنواع من الأقراص من البلاستيك، النوع الأول كان خليط من أكسيد الخارصين مع بروميد البوتاسيوم والنوع الثاني هو خليط من أكسيد المنجنيز مع بروميد البوتاسيوم، حيث تم ضغط هذين النوعين في شكل أقراص مختلفة بتغير التركيز والسمك معاً. أما النوع الثالث فهو عبارة عن خليط من أكسيد الخارصين وأكسيد المنجنيز وبروميد البوتاسيوم، حيث تم ضغط هذه النوع بتغير السمك.

خليط من البلاستيك، النوع الأول كان خليط من أكسيد الخارصين مع بروميد البوتاسيوم والنوع الثاني هو خليط من أكسيد المنجنيز مع بروميد البوتاسيوم، حيث تم ضغط هذين النوعين في شكل أقراص مختلفة بتغير التركيز والسمك معاً. أما النوع الثالث فهو عبارة عن خليط من أكسيد الخارصين وأكسيد المنجنيز وبروميد البوتاسيوم، حيث تم ضغط هذه النوع بتغير السمك.

بناءً على النتائج المتحصلة، تم إقتراح بعض الأعمال المستقبلية.
Abstract

In this work, the main objective was to design and fabricate different disks to act as optical filters and attenuators for wavelengths in the Visible (VIS) and Infrared Regions (IR) of the electromagnetic spectrum.

Zinc Oxide (ZnO) and Manganese Oxide (MnO$_2$) were selected to fabricate the disks based on the spectrometric investigations of the disks in the middle and near IR regions. The disks were fabricated by compression molding method that produces three groups of disks. The first group includes zinc oxide with the potassium bromide (KBr) and the second group includes manganese oxide with the potassium bromide, those two groups were produced with different thickness and different concentration. The third group includes zinc oxide and manganese oxide with potassium bromide that produces different disks by changing the thickness.

Different types of lasers with (532, 632.8, 675, 810, 820, 940 and 1064nm) wavelengths were used in this study, as light sources. Photodetector and Digital multimeter were used to record the incident and transmitted intensities. Graphs were drawn from the results and the absorption coefficients were calculated for all groups. For the disks of group (1), the high value of transmitted intensity was for 820nm, where up to 77% of incident intensity was transmitted. Which means those disks can be used as filters in this wavelength. And the low value of transmitted intensity was for 532nm and 632.8nm, where just 0.2% and (0.4 to 1.9) % of the incident intensity was transmitted, respectively. Those disks of group (1) can be used as attenuators in these wavelengths. For the disks of group (2), no result, were obtained for the transmitted intensity. For the disks of group (3), the high value of transmitted intensity was for 1064nm, where up to 70% of incident intensity was transmitted. It means that those disks of group (3) can be used as filters in this wavelength. And the low value of transmitted intensity was for 675nm, where just 2% of the incident intensity was transmitted. It means that those disks of group (3) can be used as attenuators in this wavelength.
From the obtained results some future works were suggested.

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Dedication

I dedicate this research to my family, with whom all things are possible.