

DEDICATION

*To my father and mother,
To my family and friends*

ACKNOWLEDGMENTS

My praise to Allah who gave me knowledge in this life, I would like to express my deep gratitudes to my supervisor Dr. Mubarak ELmahal for his guidance and supervision.

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Abstract

The primary goal of this research is to obtain laser radiation from two dyes, (Coumarin500 & Rhodamine 6G), study the resulted laser properties and study the effect of different solvents on the laser output. In this work, two dyes (Coumarin500 & Rhodamine 6G) were dissolved each separately in three different solvents (acetone, methanol and ethanol) with two concentration levels values (1.4 & 1.6 g/l). Optical properties of dyes solvents and solutions (transmission, absorption and emission) were successfully determined. These solutions optically pumped by nitrogen laser of wavelengths (337nm) using Hansch cavity configuration to produce laser.

In the case of the first Dye, (Coumarin 500) no laser radiation obtained for all solutions (acetone, methanol and ethanol) in all concentrations, While trials with the second dye (Rhodamine 6G), we produced laser successfully when the dye dissolved in all solvents used in this work with the concentration 1.6g/l.

مستخلص البحث

الهدف الأساسي من هذا البحث هو إنتاج ضوء ليزر من صبغتين مختلفتين، هما الكومرين 500 والرودمين 6G ثم دراسة خواص الليزر الناتج، ودراسة تأثير المذيبات المختلفه على الخرج الليزري.

في هذا البحث اذيت صبغتا الكومرين 500 والرودمين 6G كل على حده في ثلاث مذيبات مختلفه (الاسيتون، الميثانول، والايثانول) بتركيزين مختلفين (1.4 و 1.6 جرام/ لتر).

عينت الخواص الضوئيه للمذيبات والصبغات بنجاح. ضخت هذه المحاليل ضوئيا بواسطة ليزر النيتروجين ذي الطول الموجي (337 نانوميتر) حيث استخدمت منظومة هانش لإنتاج الليزر.

في حالة الصبغة الأولى (الكومرين 500) لم تتحصل منها على أي ليزر لكل المحاليل (الاسيتون والايثانول والميثانول) لكل التراكيز.

بينما الصبغة الثانية (الرودمين 6G) أنتج منها الليزر بنجاح عند إذابة الصبغة في الاسيتون والايثانول والميثانول (تركيز 1.6 جرام/ لتر).

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