



كلية العلوم

**Structural stability of *PMMA* prepared
in presence of some transition metal
complexes: Spectroscopic and
Photostability studies.**

Submitted by

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(B.Sc. in Chemistry)

For The Award of The M.Sc. Degree in Chemistry

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**Structural stability of *PMMA* prepared
in presence of some transition metal
complexes: Spectroscopic and
Photostability studies.**

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(Chemistry)

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كلية العلوم

الثبات التركيبي للبولى ميثيل ميثاكريلات المحضر فى وجود بعض متراكبات العناصر الانتقالية (الدراسات الطيفية و الثبات الضوئى).

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- 10) Introduction to computer programming.

Abstract

Poly methyl methacrylate (PMMA) was synthesized using different concentrations of cobalt tetraphenyl porphyrin (CoTPP) as a catalyst in presence of sodium bisulphite (NaHSO_3) as an initiator. The molecular weights and stability of the polymers against degradation by thermal and γ -radiation tools were investigated. FT-IR (Fourier Transform Infra Red), Gel Permeation Chromatography (GPC), Thermal Gravimetric Analysis (TGA), γ -radiation source and Hardness Shore D device were used as tools for characterizing PMMA structure, molecular weights, resistance to thermal and γ -radiation degradation and its hardness values. The convincingly reported results indicate the ability of such polymers to resist both thermal and radiation effects and also their higher strengths compared with pure polymer. Schemes of PMMA reaction mechanism in presence of the catalyst and the initiator in addition to either degradation schemes were suggested according to influential reaction parameters.

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