

THE EFFECT OF CATIONIC SALT ON PHOTOINITIATED FREE RADICAL POLYMERIZATION USING POLYSILANES

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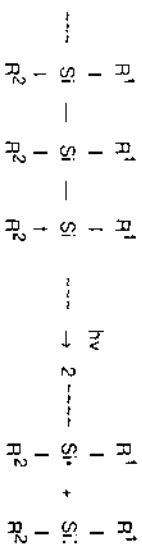
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SUMMARY

Photoinitiated free radical polymerization of methylmethacrylate (MMA), (*N*-isopropylcarbamate) ethylpropenoate (CL-960) and tripropylene glycol diacrylate (TPGDA) by using polysilanes in the presence of *N*-ethoxy-2-methyl pyridinium hexafluorophosphate (EMPF₆) and diphenyliodonium hexafluorophosphate (Ph₂I⁺ PF₆⁻) was studied. In the presence of the cationic salts the rate of photopolymerization was significantly increased. The effect was attributed to the oxidation of silyl radicals formed from the photo-scission of polysilane by pyridinium or diphenyliodonium salts. The resulting radical species are more capable of initiating the radical polymerization.

INTRODUCTION

High molecular weight polysilanes are interesting materials due to their potential use as ceramic precursor photoresist, photoinitiators, dopable semiconductors, photoconductors and nonlinear optical media[1]. These polymers absorb light between 295-400 nm depending on the nature of the substituents. Upon irradiation these materials undergo rapid photodegradation according to the following reactions



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