Effect of stirring on photoinitiated polymerization

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The polymerization of methyl methacrylate photosensitized by benzion methyl ether over a wide range of initiator absorbances was investigated. Both the polymerization rate and the polymer molecular weight distribution are modified by stirring the solution at c.a. 700 rpm. The results obtained can be explained in terms of an inhomogeneous distribution of the polymeric macroradicals under nonstirred conditions. This effect can be related to the attenuation of the light beam across the reactor, and hence is determined by the optical density of the reacting mixture.