



Polymerization of 2-(hydroxyethyl)methacrylate by two different initiator/accelerator systems: a Raman spectroscopic monitoring

Submitted by Emmanuel Lemoine on Tue, 06/10/2014 - 11:21

Titre	Polymerization of 2-(hydroxyethyl)methacrylate by two different initiator/accelerator systems: a Raman spectroscopic monitoring
Type de publication	Article de revue
Auteur	Mabilleau, Guillaume [1], Cincu, Corneliu [2], Baslé, Michel-Félix [3], Chappard, Daniel [4]
Editeur	Wiley
Type	Article scientifique dans une revue à comité de lecture
Année	2008
Langue	Anglais
Date	2008/07/01
Numéro	7
Pagination	767 - 771
Volume	39
Titre de la revue	Journal of Raman Spectroscopy
ISSN	1097-4555
Mots-clés	ascorbic acid [5], benzoyl peroxide [6], pHEMA [7], Raman microscopy [8]
Résumé en anglais	<p>The control of monomer polymerization is important when preparing biocompatible devices. The compound 2-(hydroxyethyl)methacrylate can be polymerized by redox systems using benzoyl peroxide (BPO) (as accelerator) and a substituted amine (as initiator). However, this system is associated with a highly exothermic polymerization, and end-products with inflammatory properties are produced. We have used ascorbic acid (AA) to induce BPO fragmentation and have compared the kinetics of the reaction, by Raman microscopy, with that obtained with a substituted amine. The breaking of the C= bond (Raman stretching vibration at 1641 cm⁻¹) could be monitored in both cases and reflected the incorporation of new monomer molecules into the chain. The AA-induced polymerization was slower than with the substituted amine and was accompanied by the appearance of a new band at 1603 cm⁻¹, assigned to the stretching vibrations of -COOH species incorporated into the chains. Raman microscopy appears to be a powerful tool in the study of polymeric biomaterial preparation.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua3286 [9]
DOI	10.1002/jrs.1960 [10]
Lien vers le document	http://dx.doi.org/10.1002/jrs.1960 [10]

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- [2] [http://okina.univ-angers.fr/publications?f\[author\]=3661](http://okina.univ-angers.fr/publications?f[author]=3661)
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