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Full Factorial Design Analysis Approach for Preparation of Poly(HEMA-co-EGDMA-co-VBC) Microsphere Particles*N. Abdullah,^{1*} M. Z. Yahya,¹ R. A. Mahmud,¹ A. Gupta¹**¹ Faculty of Chemical & Natural Resources Engineering,
Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia.***Corresponding author: yatiabdullah@ump.edu.my***EXTENDED ABSTRACT**

The application of a more reliable full factorial experiment has not been well-explored in studies of crosslinked polymer synthesis. In this paper, statistically full factorial design experimental was explored in the study of poly(HEMA-co-EGDMA-co-VBC) synthesis *via* suspension polymerization. Three independent factors, i.e. monomer concentration (HEMA), amount of crosslinker (EGDMA) and amount of co-monomer (VBC) were investigated to study the effect and interaction factors on morphology and yield of terpolymer particles in 2^3 factorial design of experiments. The percentage of EGDMA was found to be the most significant factor affecting the morphology of particle, with good quality particles obtained when the percentage of EGDMA increasing. Meanwhile, the factorial analysis suggests that all of the factors show a significant effect on particles yield, with more than 80% yield obtained when all factors was increased.

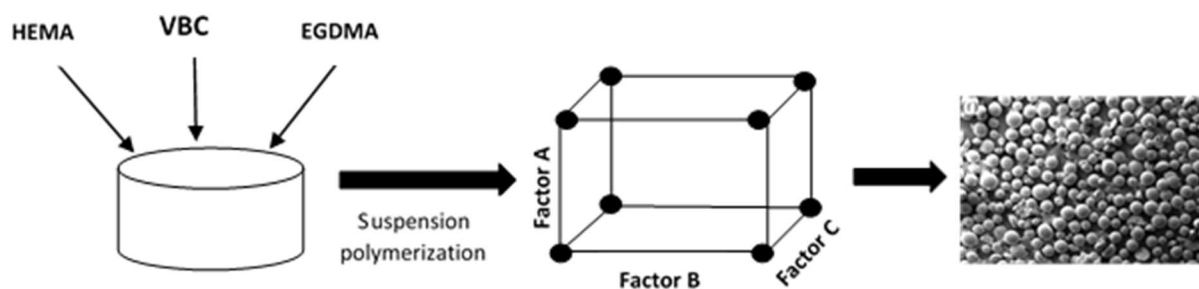


Fig. 1: Effect of HEMA, VBC and EGDMA on morphology of terpolymer sphere particles using full factorial design approach

Keywords: Full factorial design; microsphere particles; DoE; crosslinked polymer; statistical analysis

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