

RECENT DEVELOPMENT OF MICROCARRIER FOR CELL CULTURE ENGINEERING

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Chapter 1

UV/Ozone Treatment System for Polystyrene Beads Modification

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1. Introduction

Several surface modification techniques have been developed to improve wetting, adhesion, and printing of polymer surfaces by introducing a variety of polar groups, with little attention to functional group specifically. These include wet chemical (Liu and Ma, 2004; Fa'varo et al., 2007), UV irradiation (Goddard and Hotchkiss, 2007; Svorchik et al., 2002), plasma treatment (Kong et al., 2001; Guruvanketa et al., 2004; Ozdemir et al., 1999), flame treatment (Briggs et al., 2003) and UV/Ozone treatment (Murakami et al., 2003). Each of these techniques has advantages and disadvantages over the others. In this paper, surface modification by UV/Ozone treatment has been investigated. The UV/Ozone treatment has been shown to be a highly successful method for the controlled modification of polymers for applications ranging from adhesion improvement to the production of surfaces for enhanced cell attachment.

The UV/Ozone treatment has previously been used to increase the surface oxygen, surface polarity, and wettability for a number