

# Click Chemistry as a Route to Latex Particle Functionalisation

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## **Abstract**

Traditional methods of latex particle functionalisation involve incorporation of the desired molecules into the polymer particle via free-radical reactions. This method, however, is unsuitable for many more sensitive compounds due to the aggressive nature of free radicals and the high temperatures often involved. The present work concerns use of the increasingly popular 1,3-dipolar cycloaddition *click* reaction between azides and terminal alkynes to functionalise the surface of latex particles at low temperatures. Functionalisation of latex particles with alkyne groups creates the possibility of using the click reaction to couple molecules modified with azide functionality to a latex particle under very mild conditions. The paper will describe proof of principle studies for this means of attaching molecules to latex particles in which core-shell latexes with alkyne surface-functionality are being prepared and reacted with water-soluble polymers and dye compounds that have been modified to possess the required azide moiety. Biomedical and diagnostics applications of this work are of particular interest in view of the mild conditions of the attachment procedure and its tolerance of a wide range of functional groups.