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Integration of Materials and Functions in Microfluidic Devices

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The physical and chemical properties of a surface determine how that surface interacts with its surrounding environment. Despite the large number of potential schemes feasible for surface modification, the covalent attachment of polymers remains the most promising approach to tailor important properties of lab-on-chip (LOC) devices such as adhesion, wettability and biocompatibility. This presentation deals with "surface related" issues that must be addressed in the development of LOC systems. An innovative approach that allows the attachment of polymer molecules to surfaces of different composition such as glass, silicon and polymer materials will be presented. Examples of interfaces modified by "smart coatings" able to give an appropriate and predictable response to outside conditions and decorated with biologically relevant biomolecules will be discussed.