

## Coating Polymer for Non-Specific Adsorption (Anti-BioFouling)

### 非特異吸着防止のための塗布型ポリマー材料

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#### Abstract

When designing and fabricating integrated lab-on-chip platforms, biocompatibility and anti-biofouling are of utmost importance. Due to the high surface-to-volume ratio and high complexity of such systems, the control of surface properties is crucial to ensure a proper working of the devices. To suppress and limit the non-specific adsorption of proteins and cells, we present Blockmaster. Besides JSR's photo-patternable (PA) and low temperature bonding (LTB) material, two materials for the fabrication of microfluidic devices, this synthetic, anti-biofouling coating polymer is developed to tune and modify the surface properties of different material substrates.

#### Blockmaster process flow and properties

The polymer is obtained by copolymerizing a hydrophilic and hydrophobic monomer. While the hydrophilic part introduces the anti-fouling properties, the hydrophobic end-group is responsible for the interaction with the surface. By changing and optimizing the hydrophobic end-group, the Blockmaster's affinity for different surface materials (i.e. polystyrene, Si, glass and PDMS) can be optimized. The polymer is water based and thus very easy to apply. Figure 1 represents the simplicity of the coating procedure. Due to its synthetic origin the polymer is virus and animal free, and therefore cross interactions with other biomolecules will be very limited. While Cytotoxicity tests according to ISO 10993 were performed to prove its biocompatibility, protein adsorption and cell adhesion tests were conducted to demonstrate its anti-biofouling properties.

#### Summary

We have introduced Blockmaster to reduce the non-specific adsorption for bio sensor applications. JSR Blockmaster can additionally be applied in both standard well-established IVD technologies (e.g. ELISA) and all kinds of Bio-MEMS devices.

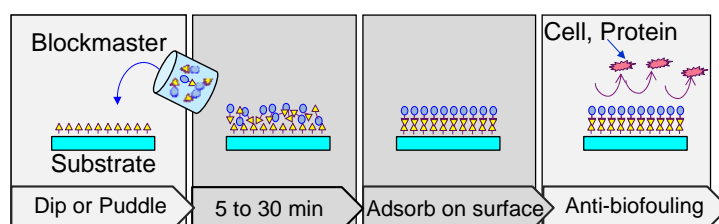


Figure 1 Process step of Blockmaster coating