situations has been demonstrated.[10,49] Real-time flow analysis may also help to reduce the large sample-to-sample variability (Table 1). Finally, this study suggests the possibility of combining photolabile protecting group chemistry and nanoarray technology to spatially direct and monitor the synthesis of combinatorial peptide libraries and subsequently detect molecular biorecognition events in a label-free format. Our future studies will focus on spot arraying the aminosilane linker to demonstrate arrayed peptide synthesis followed by combinatorial oligopeptide receptor synthesis and detection.

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**Supporting Information Available:** Optical sensor response following a series of coupling steps. Magnitude of the red shift following exposure of an APTMS-treated PSi surface. Effect of sequential amino acid coupling on the magnitude of the average optical red shift. Bright-field and total ion SIMS images and ion intensity maps. Fluorescence micrographs of the PSi/wafer interface. This material is available free of charge via the Internet at http://pubs.acs.org.

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