

Photochemical Hydrosilylation Process for Surface Modification of Microcantilevers for Sensor Development

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Technology Summary

We report a novel surface chemistry approach to microcantilever sensor design and development utilizing photochemical hydrosilylation, which enables individual microcantilevers in multicantilever array chips to be modified separately by focusing the activating UV light sequentially on each particular cantilever. Photochemical hydrosilylation of 11-undecenyltriethylammonium bromide with hydrogen-terminated silicon microcantilever surfaces was carried out to yield a robust quaternary ammonium terminated organic monolayer that is suitable for chromate detection. Terminal vinyl substituted hydrocarbons with a variety of molecular recognition sites can be attached to the surface of silicon via the photochemical hydrosilylation process. Since the chemicals only react at the surface of Si when irradiated it allows an array of cantilevers to be sequentially modified by exposing an array to the derivatization agent but only activating one or a select group of cantilevers before changing the solution and activating a different cantilever or group of cantilevers.

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