

Abstract Submitted  
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**Bovine serum albumin adsorption on passivated porous silicon layers** DAVID LOCKWOOD, LI-LIN TAY, DANIEL POITRAS, JEFF FRASER, NELSON ROWELL, National Research Council Canada, RABAH BOUKHERROUB, Interdisciplinary Research Institute-IEMN — Hydrogen-terminated porous silicon (pSi) films were fabricated through electrochemical anodization of crystalline Si in HF-based solutions. The pSi-H surface was chemically functionalized by thermal reaction with undecylenic acid to produce an organic monolayer covalently attached to the silicon surface through Si-C bonds and bearing an acid terminal group. Bovine serum albumin (BSA) was then adsorbed onto the modified surface. SEM showed that the porous films were damaged and partially lifted off the Si substrate after a prolonged BSA adsorption. Ellipsometry revealed that the BSA had penetrated  $\sim 1.3$  micrometers into the porous structure. The film damage results from BSA anchoring itself tightly through strong electrostatic interactions to the acid-covered Si sidewalls. A change in surface tension during BSA film formation then causes the pSi layer to buckle and lift-off the underlying Si substrate. FTIR results from the modified pSi surfaces showed the presence of strong characteristic Amide I, II and III vibrational bands after BSA adsorption.

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