APPARATUS AND METHODS EMPLOYING LIQUID-IMPREGNATED SURFACES

Abstract

In certain embodiments, the invention is directed to apparatus comprising a liquid-impregnated surface, said surface comprising an impregnating liquid and a matrix of solid features spaced sufficiently close to stably contain the impregnating liquid therebetween or therewithin, and methods thereof. In some embodiments, one or both of the following holds: (i) $0 < \phi \leq 0.25$, where ϕ is a representative fraction of the projected surface area of the liquid-impregnated surface corresponding to non-submerged solid at equilibrium; and (ii) $S_{ow(a)} < 0$, where $S_{ow(a)}$ is spreading coefficient, defined as $\gamma_{wa} - \gamma_{wo} - \gamma_{oa}$, where γ is the interfacial tension between the two phases designated by subscripts w, a, and o, where w is water, a is air, and o is the impregnating liquid.

[Figure 1]