Development and Characterization of Microchannel Emulsification Devices for Monodisperse Emulsions

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Contents

Abbreviations

2D	Two-dimensional
3D	Three-dimensional
CCD	Charge coupled device
CFD	Computational fluid dynamics
CMC	Critical micelle concentration
CTAB	Cetyltrimethylammonium bromide
DDS	Drug delivery systems
DRIE	Deep reactive ion etching
HLB	Hydrophilic lipophilic balance
IC	Integrated circuit
ICP	Inductively coupled plasma
LIGA	Lithographie galvanoformung abformung
MC	Microchannel
MCT	Medium-chain triacylgricerol
MEMS	Microelectromechanical systems
MS	Microspheres
O/W	Oil-in-water
O/W/O	Oil-in-water-in-oil
PDMS	Polydimethylsiloxane
PGM	Pentaglycerol monolaurate
RIE	Reactive ion etching
SDS	Sodium dodecyl sulfate
SE	Sucrose monostearate
SEM	Scanning electron microscopy
SMC	Small-sized microchannel

SPG	Shirasu porous glass
TMC	Straight-through microchannel
TOMAC	Tri-n-octyl-methylammonium chloride
Tween80	Polyoxyethlene (20) sorbitan monooleate
UV	Ultraviolet
W/O	Water-in-oil
W/O/W	Water-in-oil-in-water

Symbols

A	Channel area (m^2)
CV	Coefficient of variation (%)
d_{av}	Average diameter (m)
$d_{av,\,calc}$	Calculated average diameter (m)
d_{eq}	Channel equivalent diameter (m)
H	Channel depth (m)
L	Longer channel length (m)
L_T	Terrace length (m)
L_W	Wetted perimeter of channel (m)
S	Shorter channel length (m)
W	Channel width (m)
ΔP	Laplace pressure (N/m^2)
γ	Interfacial tension (N/m)