Development and Characterization of Microchannel Emulsification Devices for Monodisperse Emulsions

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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 triacylglycerol
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 Polyoxyethylene (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 ($m$)
$\Delta P$ Laplace pressure ($N/m^2$)
$\gamma$ Interfacial tension ($N/m$)