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## ABBREVIATIONS AND SYMBOLS

$\alpha$	alpha
$\beta$	beta
$^{\circ}\text{C}$	degrees Celsius
$\pm$	deviation
$\gamma$	grammar
$<$	less than
$\varepsilon$	molar extinction coefficient
$/$	per
$\%$	percent
$\mu$	specific growth rate
amu	atomic mass unit
cm	centimeter
e.g.	exempli gratia
g	g-force
g	gram
h	hour
$\mu\text{g}$	microgram
$\mu\text{L}$	microliter
$\mu\text{m}$	micrometer
mg	milligram
mL	milliliter
mm	millimeter
mM	millimolar
min	minute
nm	nanometer
ppm	parts per million
pH	power of hydrogen

## ABBREVIATIONS AND SYMBOLS (CONTINUED)

<i>p</i> -value	probability value
rpm	round per minute
sec	second
vvm	volume air per volume medium per minute
w/v	weight by volume
w/w	weight by weight
$R^2$	coefficient of determination
EI	electron ionization
<i>F</i> -value	Fisher's value
L	liter
M	molar
OD	optical density
$Y_{p/s}$	production yield
Y	response value
U/mL	unit per milliliter
ANOVA	analysis of variance
AOAC	Association of Official Analytical Chemist
CCD	central composite design
EDXS	energy dispersive X-ray spectrometry
FAME	fatty acid methyl ester
GC-FID	gas chromatography with flame-ionization detection
GC-MS	gas chromatograph mass spectrometer
HPLC	high performance liquid chromatography
NCBI	National Center Biotechnology Information
PCR	polymerase chain reaction
RSM	response surface methodology
TISTR	Thailand Institute of Scientific and Technological Research
TLC	thin layer chromatography