ภาคผนวก

สัญญลักษณ์และอักษรย่อ

a	Specific maintenance rate ($=mY_{EG}$)
a_w	Water activity
atm	Atmospheres (pressure)
ATP	Adenosine triphosphate
cP	Centipoises (viscosity)
D	Dilution rate ($=F/V$)
D_c	Critical dilution rate (when μ is at maximum)
D'	Diffusion coefficient
DNA	Deoxyribonucleic acid
DOC	Dissolved oxygen concentration (g/l)
DOT	Dissolved oxygen tension (mmHg)
E_h	Oxidation–reduction or redox potential (Eqn *9.4*)
Eqn	Equation
F	Medium flow rate
H	Henry's constant (Eqn *9.2*)
I	Ionic strength (Eqn *15.1*)
K_a	Activator constant (Eqn *17.44*)
K_i	Inhibitor constant defined in Section 17.2.1
K_La	Gas-transfer coefficient (Eqn *9.13*); a = gas–liquid interfacial area; $1/K_L$ = resistance to gas diffusion
K_s	Saturation constant (Eqn *2.21*)
K_r	Colony radial growth rate
L	Lag period before growth
ln	Logarithm to base e
log	Logarithm to base 10
m	Maintenance coefficient (Section 8.3.1), also molality (moles solute/kg water)
M	Molarity (moles/litre)
m_o	Osmolality or tonicity (a 1 osmolal solution exerts an osmotic pressure of 22·4 atm at 0°C)
mm	Millimetres
mmHg	Millimetres mercury (pressure)
p	Product concentration
P	Total amount of product in culture (Vp)
P_O	Oxygen demand constant, moles oxygen consumed/mole of oxidizable substrate consumed
pM	$-\log m_e$ where m_e is the molarity of a metal ion
ppm	Parts per million
q_p, q_s	Metabolic quotients, $1/x.dp/dt$ and $1/x.ds/dt$ respectively, abbreviated to q where indicated
RNA	Ribonucleic acid
s	Substrate concentration
S	Total amount of substrate in culture (Vs)
s_r	Substrate concentration in medium feed
t	Time
T	Temperature
t_d	Doubling time or mean generation time of biomass
t_r	Mean residence time or replacement time of a continuous flow culture ($=V/F$)
V	Culture volume
vol.	Volume
w/v	Weight per volume
w/w	Weight per weight
x	Biomass concentration

Y_{ATP}	Overall ATP yield (g dry biomass produced/mole ATP)
Y^{G}_{ATP}	True ATP yield, that is excluding effect of maintenance energy
Y_c	$Y_{x/s}$ where the substrate is the carbon (not energy) source (Eqn *8.4*)
Y_E	Overall growth yield, $Y_{x/s}$ where the substrate is the energy source
Y_{EG}	True growth yield, $Y_{x/s}$ where the substrate is the energy source and $m=0$
$Y_{p/s}$	Product yield $(-dp/ds)$, abbreviated to Y_p where indicated
$Y_{p/x}$	Product yield (dp/dx), abbreviated to Y_p where indicated
$Y_{x/s}$	Growth yield $(-dx/ds)$, abbreviated to Y_x or Y where indicated
μ	Specific growth rate, $1/x.dx/dt$
μ_m	Maximum specific growth rate defined by Eqn *2.21*
μm	Microns
π	Osmotic pressure (atm)
ϕ	Osmotic coefficient (Eqn *15.8*)
∞	Infinity
$\propto$	is proportional to
$>$	is greater than
$\gg$	is much greater than
$<$	is less than
$\ll$	is much less than
$\approx$	approximately equals
$\sim$	(over a symbol) denotes steady-state value