TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS

AIC	Akaike information criterion
ANN-GA	Artificial neural network-genetic algorithm
ANOVA	Analysis of variance
BBD	Box-Behnken Design
BGC	Biosynthetic gene clusters
BOM	Basis of mobility
CapEx	Capital expenditure
CO	Carbon monoxide
CO_2	Carbon dioxide
cpcB	C-phycocyanin β subunit
CRISPR	Clustered regularly interspaced short palindromic repeats
CrtE	Geranyl diphosphate synthase
DCF	Discounted cash flow
DCW	Dry cell weight
DMAPP	Dimethylallyl diphosphate
DMCO	Dimethylcyclooctanes
DNA	Deoxyribonucleic acid
DXP	Deoxy-D-xylulose 5-phosphate
DXR	Deoxy-d-xylulose-5-phosphate reductoisomerase
DXS	Deoxy-D-xylulose-5-phosphate synthase
EDTA	Ethylene diamine tetra acetic acid
EMP	Embden-Meyerhof pathway
eYFP	Yellow fluorescence protein
FFBP	Feedforward backpropagation
FGD	Flue gas desulfurization unit
FID	Flame ionization detector
FOC	Fixed operating cost
FPP	Farnesyl diphosphate
FPPS	Farnesyl diphosphate synthase
GFP	Green fluorescent protein
GGPP	Geranylgeranyl diphosphate
HEPES	4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid
hFPPS	Human farnesyl diphosphate synthase
HID	Hydrogenated isoprene dimer
HMBPP	Hydroxy-2-methyl-2-butenyl-4-diphosphate
HMG-CoA	3-hydroxy-3-methylglutaryl coenzyme A
IATA	International Air Transport Association
IDI	Isopentenyl diphosphate isomerase
IPP	Isopentenyl diphosphate
IPTG	Isopropyl β-D-1-thiogalactopyranoside
IRR	Internal rate of return
ISBL	Inside battery limit
IspS	Isoprene synthase
LB	Luria–Bertani
LD	Light and dark
LM	Levenberg Marquardt
LOD	Limit of detection

LOQ	Limit of quantification
MAPE	Mean absolute percentage error
MEP	Methyl-D-erythritol-4-phosphate
MISP	Minimum isoprene selling price
Moco	Molybdenum cofactor
MOE	Molecular Operating Environment
MSE	Mean square error
MVA	Mevalonic acid
$NaHCO_3$	Sodium bicarbonate
nblA	Nonbleaching protein A
NHOC	Net heat of combustion (Gravimetric)
NOx	Nitrogen oxides
NPV	Net present value
NREL	National renewable energy laboratory
NSI	Neutral site I
NSIII	Neutral site III
O_2	Oxygen
OpEx	Operating expenditure
PAM	Protospacer adjacent motif
PAR	Photosynthetically active radiation
PBR	Photobioreactor
PCR	Polymerase chain reaction
PMSF	Phenylmethylsulphonyl fluoride
PTFE	Polytetrafluoroethylene
RBS	Ribosome binding sites
RFP	Red fluorescent protein
RP-1	Rocket propellant
RSM	Response surface methodology
SAFs	Sustainable aviation fuels
SAH	S-adenosyl-l-homocysteine
SD	Shine-Dalgarno
sgRNA	Single-guide RNA
TEA	Techno-economic analysis
THF	Tetrahydrofolate
VOC	Variable operating cost
GDP	Gross domestic product

NOTATIONS

$	Dollar
$/kg	Dollar per kilogram
%	Percent
°C	Degree Celsius
°C/min	Degree Celsius/minute
µg/L/h	Microgram per liter per hour
µmol photon/m^2/s	Micromole photons per meter square per second
bp	Boiling point
g/L	Gram per liter
g/L/day	Gram per liter per day
g/m^3/day	Gram per meter cube per day
g/mL	Gram per milli liter
h	Hour
K_{cat}	Turnover number
kDa	Kilo Dalton
K_m	Michaelis constant
m^2/s	Square meter per second
m^3	Cubic meter
mg/g DCW	Milligram per gram dry cell weight
mg/L	Milli gram per liter
min	Minute
MJ/kg	Megajoule per kilogram
MJ/L	Megajoule per liter
mL	Milli liter
mL/min	Milli liter per minute
mM	Millimolar
ng	Nanogram
pH	Potential of hydrogen
rpm	Revolution per minute
s	Second
Tm	Melting temperature
v/v	Volume by volume
γ	Gamma
µg	Microgram
µg/g DCW/h	Microgram per gram dry cell weight per hour
µg/L	Microgram per liter
µL	Microliter