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Reactivity and selectivity in glycosylation reactions

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Reactivity and Selectivity in Glycosylation Reactions

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Voor mijn vader

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List of abbreviations

Ac	acetyl	DMF	dimethylformamide
AIBN	2,2'-azobis(2-methyl-propionitrile)	DMM	dimethylmaleimide
All	allyl	DMSO	dimethylsulfoxide
APT	attached proton test	DNPY	dinitropyridone
aq.	aqueous	dq	double quartet
Ar	aryl	dt	double triplet
Ara	arabinose	dtd	doublet of triple doublets
AraA	arabinuronic acid	DTBMP	2,6-di- <i>tert</i> -butyl-4-methylpyridine
AraF	2-deoxy-2-fluoro arabinose	DTBS	di- <i>tert</i> -butylsilylidene
AraN ₃	2-azido-2-deoxy arabinose	E	energy
Arom	aromatic	<i>E</i>	envelope
B	boat	eq.	molar equivalent
B3LYP	Becke, 3-parameter, Lee-Yang-Parr	Et	ethyl
BAIB	(diacetoxyiodo)benzene	E-X	electrophilic activator system
BDA	butane-2,3-diacetal	<i>F</i>	field-inductive parameter
Bn	benzyl	<i>f</i>	Fukui value
bs	broad singlet	FT	Fourier transform
Bu	butyl	gg	gauche-gauche
Bz	benzoyl	gt	gauche-trans
C	chair	GATED	proton decoupling applied only during relaxation
cal	calorie	Gal	galactose
calcd	calculated	Glc	glucose
cat.	catalytic	GlcA	glucuronic acid
CBz	carboxybenzyl	GlcN	glucosamine
CEL	conformational energy landscape	GlcN ₃	2-azido-2-deoxy glucose
CIP	contact ion pair	GlcNAc	<i>N</i> -acetyl glucosamine
COSY	correlation spectroscopy	h	hour(s)
C _q	quaternary carbon atom	<i>H</i>	half-chair
CSA	camphor-10-sulfonic acid	HECADE	heteronuclear couplings from aSSCI-domain experiments with E.COSY-type cross peaks
Cy	cyclohexyl	HFIP	hexafluoro- <i>iso</i> -propanol
δ	chemical shift (ppm)	HMBC	heteronuclear multiple-bond correlation spectroscopy
d	doublet	HOMO	highest occupied molecular orbital
DAST	diethylaminosulfur trifluoride	HPLC	high performance liquid chromatography
DBU	1,8-diazabicyclo[5.4.0]undec-7-ene	HRMS	high-resolution mass spectroscopy
DCE	1,2-dichloroethane	HSQC	heteronuclear single quantum coherence
DCM	dichloromethane	IR	infrared
dd	double doublet	<i>J</i>	coupling constant
ddd	doublet of double doublets	KIE	kinetic isotope effect
dddd	double doublet of double doublets	LC-MS	liquid chromatography - mass spectrometry
ddt	doublet of double triplets		
DEAD	diethyl azocarboxylate		
DFE	difluorethanol		
DFT	density function theory		
DiPEA	diisopropylethylamine		
DMAP	4-dimethylaminopyridine		

LG	leaving group	RRV	relative reactivity value
LTQ	linear trap quadrupole	s	singlet
LUMO	lowest unoccupied molecular orbital	<i>s</i>	chemical softness
Lyx	lyxose	S	skew boat
LyxA	lyxuronic acid	sat.	saturated
LyxF	2-deoxy-2-fluoro lyxose	S _N 1	uni-molecular nucleophilic substitution
LyxN ₃	2-azido-2-deoxy lyxose	S _N 2	bi-molecular nucleophilic substitution
M	molar	SSIP	solvent-separated ion pair
m	multiplet	t	triplet
m.s.	molecular sieves	<i>t</i>	<i>tert</i> -
m/z	mass over charge ratio	<i>T</i>	twist
min	minutes	Taz	tiazolinyI
Man	mannose	<i>tg</i>	trans-gauge
ManA	mannuronic acid	TBAF	tetrabutylammonium fluoride
Me	methyl	TBAI	tetrabutylammonium iodide
MFE	monofluoroethanol	TBAT	tetrabutylammonium triphenylsilyl difluoride
M.S.	molecular sieves	TBS	<i>tert</i> -butyldimethylsilyl
<i>N</i>	Mayr's nucleophilicity parameter	TBDMS	<i>tert</i> -butyldimethylsilyl
<i>N</i> -PSP	<i>N</i> -(phenylseleno)phthalimide	TBDPS	<i>tert</i> -butyldiphenylsilyl
Nap	2-methylnaphthyl	TCA	trichloroacetyl
NBS	<i>N</i> -bromosuccinimide	TES	triethylsilyl
NFM	<i>N</i> -formylmorpholine	TEMPO	2,2,6,6-tetramethylpiperidine
NIS	<i>N</i> -iodosuccinimide	TFA	trifluoroacetic acid
NMR	nuclear magnetic resonance	TFE	trifluoroethanol
NMP	<i>N</i> -methyl-2-pyrrolidone	Tf	triflyl; trifluoromethanesulfonyl
NOESY	nuclear Overhauser effect spectroscopy	THF	tetrahydrofuran
Nu	nucleophile	TIPS	tri- <i>iso</i> -propylsilyl
<i>p</i>	para	TLC	thin layer chromatography
P	protection group	TMEDA	tetramethylethylenediamine
PCM	polarizable continuum model	TMS	trimethylsilyl
PET	positron-emission tomography	TOCSY	total correlation spectroscopy
PFBS-F	perfluorobutanesulfonyl fluoride	Tol	tolyl; 4-methylphenyl
Ph	phenyl	Trt	trityl; triphenylmethyl
Phth	phthaloyl	Ts	tosyl; 4-methylbenzene-1-sulfonyl
pK _a	-log ₁₀ (acid dissociation constant)	TS	transition state
PMB	4-methoxybenzyl	td	triple doublet
ppm	parts per million	tt	triple triplet
q	quartet	TTBP	2,4,6-tri- <i>tert</i> -butylpyrimidine
<i>q</i>	atomic charge	UDP	uridine diphosphate
qd	quartet of doublets	UV	ultraviolet
r.t.	room temperature	VT	variable temperature
R _f	retention factor	Xyl	xylose
RDAS	reciprocal donor-acceptor selectivity	XylA	xyluronic acid
Rib	ribose	XylF	2-deoxy-2-fluoro xylose
RibA	riburonic acid	XylN ₃	2-azido-2-deoxy xylose
RibF	2-deoxy-2-fluoro ribose	ZPE	zero-point energy
RibN ₃	2-azido-2-deoxy ribose		

