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ABBREVIATIONS/SYMBOLS USED

AA	Acetic acid
AcOH	Acetic acid
AIDS	Acquired immune deficiency syndrome
aq.	Aqueous
Approx.	Approximately
BAIL	Brønsted acidic ionic liquid
brs	Broad singlet (in NMR)
BET	Brunauer, Emmett and Teller
Bmim	1-Butyl-3-methyl imidazolium
BSPy	<i>N</i> -(4-hydroxysulfonylbutyl)pyridinium
BSA	Bovine serum albumin
°C	Degree centigrade
¹³ C	Carbon-13 isotope
CAN	Ceric ammonium nitrate
CBSA	Carbon based solid acid
CCDC	Cambridge crystallographic data centre
CDCl ₃	Deuterated chloroform (used as NMR solvent)
CHN	Carbon hydrogen nitrogen
CTACl	Cetyltrimethylammonium chloride
CTAOH	Cetyltrimethylammonium hydroxide
d	Doublet
DAIL	Dicationic acidic ionic liquid
DBU	1,8-Diazabicycloundec-7-ene
DDQ	2,3-Dichloro-5,6-dicyano-1,4-benzoquinone
de	Diastereomeric excess
DMF	Dimethylformamide
DMSO	Dimethyl sulfoxide
DMSO-d ₆	Deuterated dimethyl sulfoxide
DPA	Dodecylphosphonic acid
DSIMHS	1,3-Disulfonic acid imidazolium hydrogen sulfate
Dsim	1,3-Disulfonic acid imidazolium

DTG	Differential thermal gravimetric
EDX	Energy-dispersive X-ray spectroscopy
ESI-MS	Electrospray Ionization Mass Spectrometry
EtOH	Ethanol
¹⁹ F	Fluorine-19 isotope
FT-IR	Fourier transform infrared spectroscopy
h	Hour
¹ H	Proton
HBV	Hepatitis B virus
Hbim	1-Butylimidazolium
HIV	Human immunodeficiency virus
HMG-CoA	3-Hydroxy-3-methyl-glutaryl-CoA
Hmim	1-Methylimidazolium
HPA	Heteropoly anion
HSA	Human serum albumin
HTW	High temperature water
IL	Ionic liquid
<i>J</i>	Coupling constant
m	Multiplet
MACIR	Microwave-assisted coupling-isomerization reaction
MCR	Multi component reaction
MeOH	Methanol
MHz	Mega hertz
min	Minute
Mp.	Melting point
MS	Mass spectrometry
Msim	3-Methyl-1-sulfonic acid imidazolium
MW	Microwave
NMR	Nuclear magnetic resonance
nm	Nanometer
NP	Nano particle
ORTEP	Oak Ridge Thermal Ellipsoid Plot
OTf	Triflate

OTs	Tosylate
PANI-PTSA	Polyaniline para toluene sulfonic acid
PEG	Polyethylene glycol
P4VP	Poly(4-vinylpyridine)
PPA	Polyphosphoric acid
ppm	Parts per million
PSPy	<i>N</i> -propane sulfone pyridinium
PsTBAC	Polystyrene-supported tributylammonium chloride
pTSA/ p-TsOH	Para toluene sulfonic acid
PTC	Phase transfer catalyst
r. t.	Room temperature
RTIL	Room temperature ionic liquid
s	Singlet
SEM	Scanning electron microscope
Simp	3-Sulfonic acid 1-imidazolopyridinium
SSA	Silica sulfuric acid
t	Triplet
TBAB	Tetrabutyl ammonium bromide
TCA	Trichloroacetic acid
TEBAC	Methyltrioctylammonium chloride
TFA	Trifluoroacetic acid
TGA	Thermogravimetric analysis
THF	Tetrahydrofuran
TSIL	Task specific ionic liquid
T.S.	Transition state
UV-vis	Ultraviolet–visible spectroscopy
XRD	X-ray powder diffraction
Å	Angstrom
δ	Chemical shift
))))	Ultrasound irradiation

GENERAL INFORMATION

1. All the chemicals used are commercially available and used without purification.
2. Reaction progress was monitored by using thin layer chromatography on glass baked plates using Merck silica gel G.
3. The ^1H and ^{13}C NMR data of all products were recorded on a JEOL JNM ECS 400 MHz spectrometer using TMS as internal standard. The NMR samples were run in CDCl_3 and DMSO-d_6 solvent. The coupling constants (J) were expressed in Hertz (Hz).
4. FT-IR spectra were recorded on a Nicolet Impact-410 spectrometer.
5. The acidity measurement of the Brønsted acidic ILs was conducted on an UV 2550 spectrophotometer.
6. Melting points were recorded in Buchi-540 micro melting point apparatus using open capillary tube.
7. Elemental analyses were performed using Perkin-Elmer series II CSNS/O Model 2400 machine calibrated against standard acetanilide.
8. Scanning electron microscopy (SEM) analyses were done in JEOL JSM-6390 LV Scanning Electron Microscope equipped with energy dispersive X-ray detector.
9. Thermogravimetric analyses were performed in SHIMADZU TGA-50.
10. The pK_a values of the ionic liquids were determined using digital pH Meter 802.
11. Single crystal X-ray diffraction data were collected on a Bruker SMART APEX II CCD diffractometer.
12. The powder X-ray diffraction patterns were recorded on a Rigaku Multiflex instrument using a nickel-filtered $\text{CuK}\alpha$ (0.15418 nm) radiation source and scintillation counter detector.