

List of appendices

Appendix A

List of Published/Accepted/Communicated research papers

1. Studies on the reaction of 16-dehydropregnenolone acetate (16-DPA) With *m*-chloroperbenzoic acid
Pranab Ghosh^{*} and Raju Subba. *Journal of the Indian Chemical Society.* 89, **2012**, 1733-1735.
2. Green and highly selective protocol for the synthesis of oximes
Pranab Ghosh^{*} and Raju Subba. *Journal of the Indian Chemical Society.* 90, **2013**, 529-532.
3. Reductive Coupling of Benzaldehyde Mediated by Camphor
Alok Majumdar, R. Subba, P. Ghosh, and A. K. Nanda.^{*} *Journal of Chemical and Pharmaceutical Research.* **2012**, 4(4):2261-2262.
4. FeCl₃ mediated one-pot route to nitriles
Pranab Ghosh^{*} and Raju Subba. *Tetrahedron Letters.* **2013**, 54, 4885–4887.
5. MgCl₂.6H₂O catalyzed highly efficient synthesis of 2-substituted-1H-benzimidazoles
Pranab Ghosh^{*} and Raju Subba. *Communicated to Tetrahedron Letters.* [Ms. Ref. No.: TETL-D-14-02836]
6. Titanium incorporated silica: a new recyclable solid support for efficient synthesis of substituted imidazoles.
Pranab Ghosh^{a*} Raju Subba^a, Abiral Tamang^b, Bittu Saha^a and Gyan Chandra Pariyar.^a *Communicated to RSC Advance.* [Ms. Ref. No.: RA-COM-03-2015-003761]

Appendix B

List of research papers presented in preceding seminars

1. Green and highly selective protocol for the synthesis of oximes
Raju Subba and Pranab Ghosh.* National Seminar on Frontiers in Chemistry 2011 and Celebration of the International Year of Chemistry 2011. (March 14-16, 2011), Department of Chemistry, University of North Bengal, Darjeeling. (Oral presentation).
2. $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ – As an Efficient Alternative Catalyst for the Synthesis of 2-Substituted Benzimidazoles
Raju Subba and Pranab Ghosh.* UGC Sponsored National Seminar on Frontier of Chemistry. (November 15-16, 2011), Department of Chemistry, Gour Mahavidyalaya, Malda. (Oral presentation).
3. FeCl_3 -Silica: A highly efficient, solvent free and reusable heterogeneous system for the facile synthesis of pyrazine
Raju Subba, Amitava Mandal and Pranab Ghosh.* 13th CRSI National Symposium in Chemistry. (February 4-6, 2011), National Institute of Science Education and Research (NISER) and KIIT University, Bhubaneswar. (Poster presentation).
4. Cost effective catalyst free synthesis of 2, 4, 5-trisubstituted- 1H- imidazoles
Raju Subba and Pranab Ghosh.* Chemical Research Society of India Eastern Zonal Meeting 2011 and Celebration of the International Year of Chemistry 2011. (July 22-24, 2011), Department of Chemistry, University of North Bengal, Darjeeling. (Poster presentation).

Appendix C

Abbreviations

FeCl ₃	Ferric chloride	TS-1	Titanium silicalite
CHCl ₃	Chloroform	WO ₃	Tungsten trioxide
HCl	Hydrochloric acid	Al ₂ O ₃	Aluminium oxide
ZnCl ₂	Zinc Chloride	CH ₃ CN	Acetonitrile
DMF	N,N-Dimethylformamide	Bi ₂ O ₃	Bismuth(III) oxide
(NH ₄) ₂ S	Ammonium sulfide	Na ₂ SO ₄	Sodium sulphate
DMSO	Dimethyl sulfoxide	KBr	Potassium bromide
AgNO ₃	Silver nitrate	Cu ₂ (OTf) ₂	Copper I triflate
PTFE	Polytetrafluoroethylene	KCN	Potassium cyanide
H ₂ SO ₄	Sulfuric acid	CuCN	Cuprous cyanide
OIPh	Iodosylbenzene	NaHCO ₃	Sodium bicarbonate
TAPC	Triphosphazene	KOH	Potassium hydroxide
NBS	N-bromosuccinimide	TMS	Tetramethyl silane
NaBH ₄	Sodium borohydride	I ₂	Iodine
MeOH	Methanol	DCE	Dichloroethane
MoO ₃	Molybdenum oxide	Me ₃ SiN ₃	Trimethyl silyl azide
NiCl ₂	Nickel chloride	H ₂ O ₂	Hydrogen peroxide
NaN ₃	Sodium azide	THF	Tetrahydrofuran
FeCl ₂	Ferrous chloride	PIDA	Phenyliodine diacetate
KI	Potassium iodide	CuSO ₄ .5H ₂ O	Copper sulphate hydrate
[Os(N)O ₃] ⁻	Nitridoosmate	Fe(ClO ₄) ₃	Iron III perchlorate
BuONO	tert-Butyl nitrite	Fe(OTf) ₃	Iron III triflate
Ti	Titanium	NH ₄ OAc	Ammonium acetate
PEG	Polyethylene glycol	SPB	Sodium perborate
CAN	Ceric ammonium nitrate	ABM	Animal Bone Meal
SnCl ₂	Stannous chloride	PPA	Polyphosphoric
Yb(OTf) ₃	Ytterbium III triflate	PbO ₂	Lead IV oxide
CuI	Cuprous iodide	CuBr	Cuprous bromide
MnO ₂	Manganese oxide	Cu ₂ O	Cuprous oxide
NaHSO ₃	Sodium bisulfite	In(OTf) ₃	Indium III triflate

Na ₂ S ₂ O ₅	Sodium metabisulfite	Sc(OTf) ₃	Scandium III triflate
KHSO ₄	Potassium bisulfate	Cu(OTf) ₂	Copper II triflate
ZrCl ₄	Zirconium IV chloride	CuO	Cupric oxide
Sm(OTf) ₃	Samarium III triflate	H ₂ O	Water
PBI	Polybenzimidazole	HClO ₄ -SiO ₂	Perchloric acid-silica
BF ₃ .SiO ₂	Boron trifluoride-silica	Fe ₃ O ₄	Iron oxide
TFA	Trifluoroacetic acid	TiCl ₄	Titanium tetrachloride
TiCl ₃	Titanium trichloride	Cu(NO ₃) ₂	Cupric nitrate
mL	Milliliters	°C	Degree celsius
Temp	Temperature	h	Hour
Min	Minutes	Mp	Melting point
ppm	Parts per million	mmol	Millimole

16-DPA	16-dehydropregnenolone acetate
MgCl ₂ .6H ₂ O	Magnesium chloride hexahydrate
<i>m</i> CPBA	Metachloroperbenzoic acid
DDQ	2, 3-Dichloro-5, 6-dicyano-1, 4-benzoquinone
TCT	2, 4, 6-trichloro-1,3,5-triazine
NH ₂ OH.HCl	Hydroxylamine hydrochloride
<i>n</i> Bu ₄ NI	Tetra- <i>n</i> -butylammonium iodide
DBU	1, 8-Diazabicyclo[5.4.0]undec-7-ene
PCBS	poly(N, N'-dichloro-N-ethylbenzene-1, 3-disulfonamide
TCBDA	N, N, N', N'-tetrachlorobenzene-1, 3-disulfonamide
Fe(BF ₄) ₂ .6H ₂ O	Iron (II) tetrafluoroborate hexahydrate
TBAF	Tetrabutylammonium fluoride
FeSO ₄ .7H ₂ O	Ferrous sulfate heptahydrate
TBAB	Tetrabutylammonium bromide
Fe(NO ₃) ₃ .9H ₂ O	Iron III nitrate nonahydrate
(NH ₄) ₂ Fe(SO ₄) ₂ .6H ₂ O	Ferrous ammonium sulfate hexahydrate
NH ₄ Fe(SO ₄) ₂ .12H ₂ O	Ammonium ferric sulfate dodecahydrate
TBHP	tert- Butyl hydroperoxide
DBSA	dodecylbenzenesulfonic acid

TEMPO	2, 2, 6, 6-Tetramethylpiperidine 1-oxyl
DMEDA	N, N-Dimethylethylenediamine
PhI(OAc) ₂	(Diacetoxyiodo) benzene
p-TSA	Para-toluenesulfonic acid
K ₅ CoW ₁₂ O ₄₀ ·3H ₂ O	potassium dodecatungstocobaltate trihydrate
[(CH ₂) ₄ SO ₃ HMIM]	3-Methyl-1-(4-sulfonicacid)butylimidazoliumhydrogen
[HSO ₄]	sulphate
DABCO	1, 4-Diazabicyclo[2.2.2]octane
SEM	Scanning electron microscope
TLC	Thin layer chromatography
FT IR	Fourier transform infrared spectroscopy
NMR	Nuclear magnetic resonance
EDX	Energy-dispersive X-ray spectroscopy
