

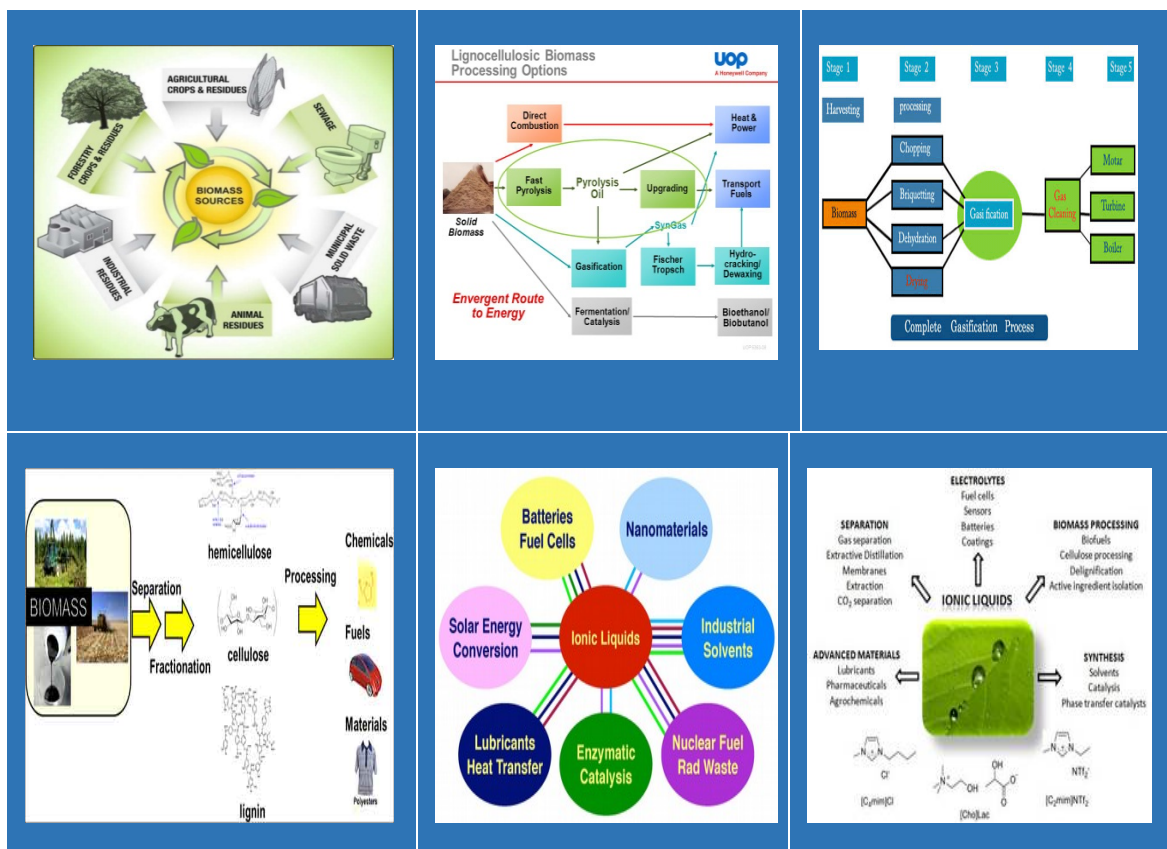
BIOMASS AND PROCESSING



The research focus is on the use of ionic liquids for thermophysical property determination for separations and for biomass processing. Currently there are 2 PhDs and 9 Masters students actively engaged in projects related to this area. For biomass processing the use of Green Chemistry principles are being used for the valorisation of the biomass. Projects that are being investigated are: use of liquid hot water for the extraction of lignin from sugarcane bagasse (SCB), use of ionic liquids for the extraction of cellulose nanocrystals, optimisation of the conversion of cellulose and hemicellulose to sugars. A range of analytical techniques such as SEM, TEM, HPLC, TGA, and DSC, FTIR are used to characterise the component from the SCB. There are collaborations with CSIR's FFPD at UKZN, CSIR's NCNSM at Pretoria, Thermodynamics Research Unit.

PROF N DEENADAYALU (PRINCIPAL INVESTIGATOR)

CURRENT RESEARCH ACTIVITIES



GROUP MEMBERS:

Dr. D. Ekka (PDF)
Dr Z. Tywabi (PDF)

Doctoral students:

Ms. L. Mthembu (to register 2016)
Mr. D.V. Mashego(to register 2016)

Masters students:

Mr. M. Makhanya
Ms. N. Mgxadeni
Ms. G. Mdletshe
Mr. C. Gnana
Mr. T. Mohale
Mr. N. Hlongwa

PAST STUDENTS:**PhD**

Dr I. Bahadur
Dr Z. Tywabi

Masters

Ms P. N. Sibiyi
Ms N. V. Gwala
Ms S. Singh
Ms Z. Tywabi
Ms M. B. Nduli
Ms T. Mkhize
Mr S. Chule
Ms L.D. Mthembu
Mr D.V. Mashego

COLLABORATORS:

1. Prof T. Hofman – Warsaw University of Technology, **Poland**
2. Dr S. Sen – California State Polytechnic University-Pomona, **USA**
3. Dr R. Gardas – Indian Institute of Technology, Madras, **India**
4. Prof M. Aznar – University of Campinas, Campinas, Brazil
5. Prof D. Ramjugernath – University of KwaZulu-Natal, **South Africa**
6. Dr Jason Hallett – Imperial College, London, **UK**
7. Dr Carsten Zetzl from the Institut für Thermische Verfahrenstechnik Institute (Thermal Separation Process) at the Technische Universität Hamburg, **Germany**

FUNDING

NRF Thuthuka Women-in-Research Grant Holder 2004-2009 **R 1 822500**

DUT TIP Grant 2010 **R 270 000**

HESA/NRF India-Brazil-South Africa grant 2010-2011 **R 79 600**

DST/NRF NEP equipment grant 2011. Purchased a DSA 5000 M densitometer, refractometer and speed of sound analyzer
R 695 000

DUT equipment grant 2011 **R 50 000**

NRF Rated Researcher Incentive Funding 2011-2016 **R 40 000p/a**

HESA/NRF India-Brazil-South Africa grant 2014-2015 **R 299 500**

NRF Competitive Programme for Rated Researchers Grant 2014-2015 **R 850 000**

NRF SA-German Research Cooperation Grant 2014-2015 **R261 400**

NRF SA-UK Bilateral Visiting Research Fellow Grant 2015 **R 40 000**

HESA/NRF India-Brazil-South Africa grant 2015-2016 **R 100 000**