

## Curriculum Vitae

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### Qualification

#### Educational

1. Post doc: Bionanotechnology (Chemical & Materials Engineering, University of Kentucky, KY, USA, June 2005-cont.)
2. Ph.D.: Polymer Science and Technology (Materials Science Centre, Indian Institute of Technology, Kharagpur, India, 2004).
3. M.Sc.: Chemistry (Organic) (Utkal University, Orissa, India)
4. B.Sc.: Chemistry (Hons.) (Utkal University, Orissa, India)

#### Research Experience

##### June 2005-cont.

My current research work is focused on the development of novel methods using FTIR imaging to characterize the patterning polymerization reaction kinetics (photo- and thermal-initiated) of intelligent polymer networks on silicon, glass, and gold substrates with microscale spatial resolution and also the polymerization reaction kinetics of intelligent polymer network by atom transfer radical polymerization (ATRP) from silicon and gold surface.

Other project is based on the fabrication of intelligent polymer networks on LC sensor platform and evaluates its gas sensing characteristics.

##### 2000-2004

Ph.D. Thesis title: *Flocculation and Rheological Investigations in Aqueous Solutions of Hydrolysed and Unhydrolysed grafted Polysaccharides*

My Ph.D. thesis work is based on synthesis and characterizations of biodegradable polymers and their application for flocculation and viscosifying properties. I have

experience in synthesis of different types of hydrolysed and unhydrolysed graft copolymers and their characterizations by FTIR, SEM, DSC, TGA and XRD.

### List of publications

#### Patent

1. R.P.Singh and **D.R. Biswal**, “High performance flocculating agents and viscosifiers based on hydrolysed polyacrylamide grafted amylopectin and polyacrylamide grafted carboxymethyl cellulose” Patent Application No: 196/KOL/2003 dated: 01/04/2003.

#### Journals

1. **D.R. Biswal**, R.P.Singh, “Flocculation Studies Based on Water-soluble Polymers of Grafted Carboxymethyl Cellulose and Polyacrylamide”, Journal of Applied Polymer Science (in press)
2. **D.R. Biswal**, R.P.Singh, “Characterisation of carboxymethyl cellulose and polyacrylamide graft copolymer”, Carbohydrate Polymer, 57, 379-387, 2004.
3. **D. R. Biswal**, R. P. Singh, “The flocculation and rheological characteristics of hydrolysed and unhydrolysed grafted sodium alginate in aqueous solutions”, Journal of Applied Polymer Science, 94 (4),1480-88, 2004.
4. R.P.Singh, B.R.Nayak, **D.R. Biswal**, T.Tripathy, K. Banik; Biobased polymeric flocculants for industrial effluent treatment, Materials Research Innovations, 7, 331-340, 2003.
5. B. R. Nayak, **D. R. Biswal**, N. C. Karmakar and R. P. Singh, “Grafted hydroxypropyl guar gum: Development, characterization and application as flocculating agent”, Bulletin of Materials Science, 25(6), 537-540, 2002.

#### Conferences

1. S.T. Lim, H. J. Choi, **D. R. Biswal** and R.P. Singh, “ Characteristics of turbulent drag reduction by amylopectin and its derivatives”, 12th Annual Polychar World forum on Advanced Materials, Polychar-12, 6-9 January, 2004,University of Minho, Guimaraes, Portugal.
2. **D. R. Biswal** and R. P. Singh, “A new class of flocculating agents and viscosifiers based on hydrolysed and unhydrolysed grafted carboxymethyl cellulose”,

International Seminar on Frontiers of Polymer Science and Engineering,  
MACRO-2002, 9-11 December, 2002, I.I.T Kharagpur, India

3. **D. R. Biswal** and R. P. Singh, "Flocculation studies based on grafted carboxymethyl cellulose for wastewater treatment", 13th annual general meeting, Material Research Society of India & Theme Symposium on ' Perspectives in Materials Characterisation', 7-9 February, 2002, Hyderabad, India
4. B. R. Nayak, **D. R. Biswal**, N. C. Karmakar and R. P. Singh, "Grafted hydroxypropyl guar gum: Development, characterization and application as flocculating agent", The National Conference on Frontiers in Materials Science and Technology, 22-23 February, 2002, I.I.T, Kharagpur, India.