

EVENT

# Latest trends in green chemistry and technology highlighted in Mumbai meet

fluids, micro-reactors, recyclable enzyme

Expanded and broader coverage



Mr. Ravi Raghavan, Editor, *Chemical Weekly*, lighting the lamp



Prof. James Clark, Green Chemistry Centre of Excellence, Inaugurating the exhibition

CASE STUDIES

## Novel approaches to developing cleaner processes

maceuticals and the speciality & fine *Lyrica*,

**The Pfizer experience**

Dr. Peter Dunn, Pfizer Green Che-

duct – was as high as 86, it was difficult

**Sustainable development methodology**

Front end (Maximise atom efficiency)	Back end (Prevent/reduce pollution & waste)
Process intensification	

was significant, but the undesired en

The choice of process finally ad

The production process was fine-

- chemistry, process intensification, new
- aqueous effluents, soiled organic
- Design footprint – efficacy of the

**Green chemistry: one part of sustainability initiatives**

- ment, crystallization & milling;
- 

**Eco-designed C-Glycoside**

first eco-designed C-Glycoside using

The synthesis of the first beta-C-



**Dr. M.G. Palekar**

purification of intermediates &



10% reduction in liquid effluent,



**Key role of catalysis**



Dr. Raksh Vir Jasra

facture of fine chemicals. He provided

exchanged zeolites as catalysts, sol

EVALUATING PERFORMANCE

**‘New paradigms needed to measuring greenness’**

hydroxide, along with significant sol

We need to define greenness better. A

sis shifting from efficiency, to one of

**Novel green metrics**

**Catalytic options**

vents. “If you have to oxidize do it in

critical fluids, ionic fluids etc. “How

a new Sertralin process of Pfizer where

that while enzymes are biodegradable,

high regio-specificity, they have limita

gy. “Enzyme immobilization is the ans-

Enzyme Aggregates (CLEA), which is

seemingly efficient process with 90%

E Factor of 40% and atom utilization



**Dr. John C. Warner**

**Opportunities in the food chain**

begins with science fiction. “Innova-  
tion happens not within the field of fo



**Prof. James Clark**

**Taking ideas to the marketplace**

commercialization challenges of green

with incomplete material characteriza

tion, field-tested proof-of-utility and

**‘Innovation begins with science  
fiction’**

Chief Technology Officer, Warner Bab



**Mr. Nitesh Mehta**

**'Factor in endocrine disruption'**

pointed out that chemical hazards must

upon falsified assumptions and reliance

**Sustainability by design**

Poor processes ?

ways not reflected in current health

*in silico*   *in vitro*

measure specific impacts. “LCA also identifies trade-offs, hot spots and opportunities for resource optimization. It

BIO BASED CHEMICALS

**‘Transition from a fossil- to bio-based economy will lead to profound shifts in industry structure’**

converted through enzymes/micro-organisms  
on the challenges of finding market ac



**Multiple alliances emerging**

**Market potential**

a size of about €104-bn by 2012 and to around €264-bn by 2017, with their

**Carbohydrates to platform chemicals**

**Drivers for innovation changing**

zero discharge, high feed & product flexibility and more than 80% carbon



FOLLOWING THE LEADER

**Global regulatory trends define future course**

*Chemical Weekly,*



He emphasized the need for tech

**Short-sighted view of treaties**

classification and labeling he said, “In

India mainly address site-specific is

the regulation. “REACH is hazard- and **‘Regulations driving innovation’**