In this issue

Cavitation

P. R. Gogate *et al.* (**page 35**) present an overview of the applications of cavitation, a novel way for energy dissipation in multiphase reactors, for the intensification of chemical/physical processing applications. Cavitation is the phenomena of generation, growth and subsequent collapse of cavities resulting in generation of highly reactive free radicals, hot spots and intense turbulence coupled with liquid circulation currents. Different reactor configurations have been described along with the relative merits and demerits. The important considerations required for efficient scale-up of the cavitational reactors and subsequent industrial applications have been depicted. Overall it can be said that, cavitation can be effectively applied for a variety of physcial/chemical transformations including chemical synthesis, biotechnology, environmental engineering, polymer engineering, etc. and the rates of transformations are at times, order of magnitude higher as compared to the conventional approach and also the energy consumption is relatively less. Undoubtedly, combined efforts of chemists, physicists, chemical engineers and equipment manufactures, according to the guidelines provided in the article, will be required for the Chemical Process Industry (CPI) to harness cavitation as a viable option for process intensification.

How degraded are Himalayan forests?

R. Prabhakar *et al.* (**page 61**) present the results of an empirical work on the Central Himalayas. Environmental degradation is an important issue of today and we need effective and accurate methods of measuring and monitoring levels of forest cover, biodiversity and degradation on a regular basis. New technologies of remote sensing with high resolution imagery, cartography and various computational tools allow a reliable and convenient method to constantly monitor environmental variables. However, measurements of forest cover are estimates and should be provided with confidence measures.

The authors provide an estimate of the forest cover in the Central Himalayas and detail a methodology for confidence intervals on these estimates. They have innovated and used high resolution Ikonos imagery for providing these estimates over a larger area. The methodology can be effectively used for better estimates of environmental parameters on a regular basis.

The authors also compare forest estimates with those provided by the Forest Survey of India and note considerable differences that need to be resolved. Also, monitoring agencies like the Forest Survey of India that have the responsibility of providing estimates of forest cover need to use more robust methodology for estimates of forest cover, as this paper has pointed out. Further, it would be better, in principal, that environmental monitoring agencies be organizationally independent of management of the resources that they monitor.

Evolution of feeding behaviour in the Tasar silkworm

The plant phenological age or development age hypothesis predicts that herbivores prefer and perform better on developmentally young plants than on old plants because plant nutritional quality decreases with age. As a general rule, the nutrient level, i.e. nitrogen and water decreases while the non-nutrient chemicals and leaf toughness increases with plant age. Protease inhibitors are a class of compounds found in a wide range of plant families and are studied for their activity as anti-herbivore compounds. Tasar silkworm, *Antheraea mylitta* (Lepidoptera: Saturniidae) is a polyphagous species having *Terminalia arjuna*, *T. tomentosa* and *Shorea robusta* as primary host plants. Little is known about the chemical basis of *A. mylitta*–host plant interaction. For many insect taxa, this type of research is the cornerstone of chemical ecology, as it has direct bearing on insect fitness and host resistance. Shruti Rai *et al.* (**page 68**) elucidate that early instars of *A. mylitta*

show differential preference for eating towards developmentally different leaves of host plant, *T. arjuna*. Nutritional value study of leaves of different age groups shows that young leaves are nutritionally rich as compared to semi-mature and mature leaves. However, growth response and survival of larvae are better on semi-mature leaves. This differential feeding response of larvae has been examined and discussed as an adaptation for coexistence of the insect and its host plant.