due to its own tradition of healthcare system. The Himalayan region including Northeast India is a rich repository of medicinal plants with a total of 1748 species[3]. Plants like *Digitalis purpurea* (digitoxin), *Taxus wallichiana* (taxol), *Raulfia serpentina* (resperine), *Panax assamica* (ginsenosides), *Nardostachys jatamansi* (jatamansin), etc. would be of special interest to the pharmaceutical industry. The northeastern region with its diversified plant species has tremendous potential and a natural advantage in this emerging area. Ancient people utilized thousands of different plant products, and now the importance of traditional system of medicine has been recognized all over the world. Plant biotechnology has gained considerable importance for production of phytochemicals with biological activities. It helps in exploiting plant species for improving their importance in human welfare. It also solves the problem of threatened and endangered species leading to restoration of the phytodiversity by plant tissue culture or *in vitro* culture. Genetic resources are renewable, provided they are well managed. *In vitro* conservation of germplasm can be used for conservation of rare, endemic, threatened and endangered species of this region having greater ecological as well as economic importance.

The northeastern region has not been evaluated or explored for medicinal plants, except for information available from folklore or from local medicinemen. Biotechnological implementation in this region should be done as soon as possible along with proper action plans. By this, plant metabolites which are the major resources of pharmaceuticals, food additives, fragrances, pesticides, enzymes, etc. can be evaluated properly. Screening of all plant species of this region should be done to develop novel biologically active compounds, leading to effective treatment of cancer, AIDS, ageing, hypercholestromia, diabetes, etc. In the agriculture and medicinal sector, we need more extensive research work to convert this biological wealth of the country to economic wealth on a sustainable basis.

Northeast India should receive the highest priority for development in plant genetic resource conservation. Proper implementation of biotechnology needs to be directed for commercialization of products and processes utilizing the existing rich natural resources of the country. In the coming decades an appropriate coordination and implementation of policies is necessary by the various ministries, research and development sectors, NGOs and individuals in the private sectors to systematize these efforts towards development of the country.

1. Mao, A. A., In Proceedings of the National Seminar on Biodiversity and Future Concern (eds Handique, P. J. and Kalita, M. C.), Guwahati, 2006, pp. 1–7.
2. Anon., Cultivation of Selected Medicinal Plants, National Medicinal Plant Board, Department of Ayush, Ministry of Health and Family Welfare, Government of India, New Delhi, 2004.
3. Airy, S., Rawl, R. S., Dhar, U. and Purohit, A. N., *Curr. Sci.*, 2000, **79**, 1467–1471.

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Secondary emissions from spectrofluorimeters

The reason given for secondary emissions from spectrofluorimeters by De *et al.*[1] is wrong. The observed undertones and overtones described in that correspondence are due to Bragg's law ($n\lambda = 2d \sin \theta$) that governs the grating-based monochromator function. In a flourimeter, two monochromators are used to disperse polychromatic light, one for the lamp and the other for sample emission. Besides undertones and overtones (λ/n, $n\lambda$, where n is an integer), one may also detect 'apparent emission' at $2\lambda/3$, $4\lambda/5$, $3\lambda/2$, etc., all of which are explained by Bragg's law. The above statement can be verified by doing a simple experiment with a scatter solution. When a scattering solution is excited at 900 nm and emission monochromator is scanned from 250 to 750 nm, three peaks are observed at 300 ($\lambda/3$), 450 ($\lambda/2$) and 600 nm ($2\lambda/3$) (Figure 1). The reason for this is as follows: when the excitation monochomator is set at 900 nm, it allows the 450 (second order) and 300 nm (third order) from the light source. When scattered light of 300 and 450 nm passes through the emission monochromator, it is detected at 300, 450 and 600 nm (second order of 300 nm). Doing the same experiment with a

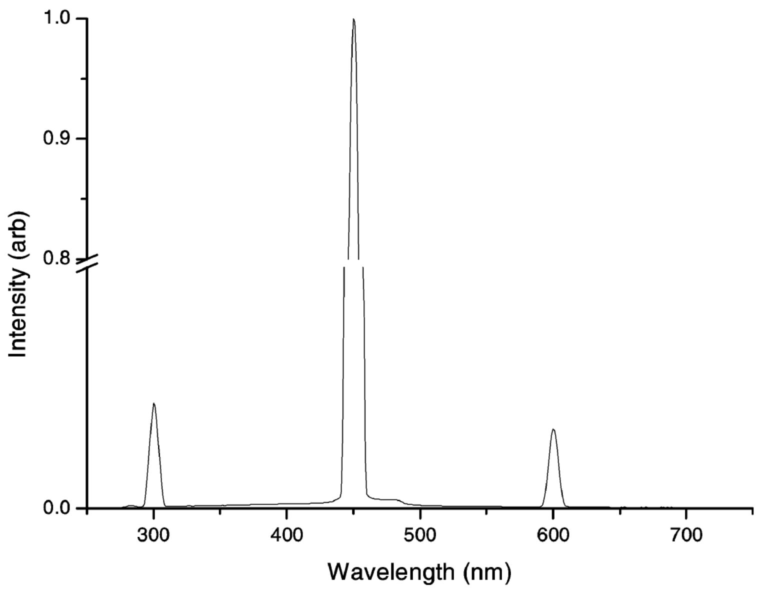

Figure 1. Emission spectrum of a scatter solution (MgO in water) excited at 900 nm (slit width 7.5/7.5 nm) recorded using a fluorimeter (Spex Fluorolog).

345 nm cut-off filter between the excitation monochromator and the sample, eliminates peaks of 300 and 600 nm. Using a proper filter before the sample is strongly advised.

1. De, D., Bagchi, P. and Bhattacharyya, D., *Curr. Sci.*, 2007, **93**, 911–914.

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Response:

We learn through quantum uncertainty that a system confined in a finite space is described by an appropriate Fourier sum in the momentum and hence the wavelength space. To appreciate this fact for electromagnetic waves, one needs to go into the quantized version of the theory, i.e. quantum electrodynamics leading to the photon description of the electromagnetic wave. Localization of a system in space leads to uncertainty in the corresponding momentum values, which in turn indicates multiple values for the wavelength in the dual wave picture through the well-known de Broglie relation.

The overtones and undertones as derived from Bragg's law of the spectrofluorimeter monochromator functioning are certainly an accompanying phenomenon in this case. However, in our experimental conditions using dilute solutions of soluble protein, no significant scattering corresponding to $2\lambda/3$, $4\lambda/5$, $3\lambda/2$, etc. could be detected. Even with a scatter solution (a suspension of MgO in water as shown in Figure 1 above), scattering at these wavelengths is abysmally low. It shows that even with relatively large slit width of 7.5/7.5 nm, the scattering intensities are below 0.8 AU. Actual values are probably much lower and have not been mentioned. We did not include the monochromator function in our text because all the scattering and fluorescence as observed in protein solution experiments could be adequately explained from simple harmonics present in the monochromatic light. Probably it would have been better to mention the monochromator-related phenomenon irrespective of its detection. However, the reason mentioned for generation of overtones and undertones in our correspondence that is supported by experimental evidence, stands to be correct.

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Warning bells in Ansupa Lake, Orissa

Ansupa Lake, one of the two freshwater lakes found in Orissa, is vanishing slowly. Another freshwater lake, i.e. named Saro, in Puri District, has already been wiped out from the wetland maps of Orissa due to anthropogenic pressure. The Ansupa Lake is situated on the lap of Saranda and Bishnupur hills, Cuttack District and is fringed by mango orchards. This pictorial lake has assumed international importance, as it is home to several migratory as well as domiciled birds. According to the inland wetlands of India report, there were 11,860 individuals from 42 bird species[1]. The Ansupa Lake, which makes ecological balance of flood waters from River Mahanadi, is gradually disappearing due to a host of man-made factors. A recent study on this wetland using Indian Remote Sensing (IRS) satellite P6 (Resourcesat-1) has indicated that about 30% of the total 317 ha lake area has been completely occupied for agriculture, while nearly 12% is infested by aquatic weeds[2]. Heavy exploitation of vegetation from the nearby hills accompanied with siltation, increased growth of water hyacinth (*Eichhornia crassipes*), and algae are turning the lake into a swamp.

There was a narrow stretch of clear water in the lake, as seen in the satellite images of 8 January 2004. Reclamation of land and change in land-use pattern are the most serious problems. During our field visit in September 2006, we found that many parts of the lake were encroached for agriculture and traditional fishing purposes. Comparing the satellite data with Landsat Multi Spectral Scanner (MSS) taken in 1973, clearly indicates a significant loss of the lake area. Weeds like elephant grass (*Pennistum purpureum*) and water hyacinth cover the rest of the area and reclamation of the lake is going on, unhindered. If this type of human-induced degradation of the Ansupa Lake is left unchecked, the pristine natural freshwater body would permanently disappear, sooner than later.

The Ansupa Lake can now be declared a Community Reserve according to the amendment made in the Wildlife Protection Act (1972) in 2003, whereby the wetlands will have all the privileges of a Wildlife Sanctuary or a National Park, and also the additional advantage of local community participation, as it will be obligatory/statutory for the Government to set up a 'participatory management' involving the local community. Declaring Ansupa a Community Reserve will not only protect the birds, but also save the only freshwater wetland in Orissa from further encroachment.

1. Vijayan, V. S., Prasad, S. N., Vijayan, L. and Muralidharan, S., Inland wetlands of India – Conservation priorities, SACON, Coimbatore, 2004.
2. Pattanaik, C. and Reddy, C. S., *Natl. Acad. Sci. Lett.*, 2007, **30**, 161–164.

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