

Policies for research fellowships and associateships

Each year the Government of India offers over 2000 Research Fellowships and Associateships through CSIR, UGC, etc. to bright students with high academic record, from various streams of science. These positions are offered for up to 5 years as a part of training in methods of research under the expert guidance of Faculty members/Scientists working in Universities/Institutes/National laboratories. In the process the Government spends around Rs 300 crores each year for providing Fellowships/Associateships and infrastructural support for research work. But it is amazing that there is no Government policy to utilize the trained manpower in their field of expertise. While this is adversely affecting the development of Indian science, it is also catalysing brain-drain from the country. Further in the absence of any guidelines, the research organizations are exploiting the young research workers for their own progress. In fact, in the name of human resource development, these organizations pocket the credit of manpower training, while the guides/supervisors reap advantage during their promotions but the candidates are often without employment even after dedicating more than 10 years in a research laboratory. As the

normal age limit for an entry to the scientific organization is usually 35 years, these Fellowship/Associateship schemes are Hobson's choice for the youth who wish to continue with scientific research. The dogging instability obviously creates a lot of social problems to them who usually also have dependents by then. Besides, it is always not possible to start a completely new career, after devoting prime time of their life in research organizations.

It is unfortunate that in a poor country like ours, a huge amount of money and manpower is being wasted due to lack of proper planning. Since no nation can progress without sustained scientific research, the trained human resource which is a most valuable asset must be utilized in developmental activities, instead of discarding it after 10–15 years. At this crucial juncture, when the research workers feel frustrated and humiliated having stepped into scientific research, it is necessary that prior to the award of Research Fellowships and Associateships it must be ensured that there is no wastage of money and manpower and also no exploitation of the research workers. The Government must ask CSIR and other agencies dis-

persing Fellowship and the Associateship schemes to clearly state the following: (i) What type of training is it for? (ii) Why is it required/offered? (iii) How is the trained manpower to be utilized? and (iv) What is the nation achieving through it?

Considering the country's present economic scenario, for better utilization of money, manpower and stopping brain-drain, the Fellowships/Associateships must be strictly awarded in the areas of national interest only and not in academic or personal interest. The Government should enunciate these areas of interest and instruct the research organizations to train manpower in these specified areas only. The organizations should not be allowed to exploit the researchers in diverse fields. To stop exploitation provisions could be made to recruit the research fellows and associates in proper jobs at appropriate levels after the completion of their training/tenure.

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Solar radiation and atmospheric models control the climatic effects

The important factors which govern the global climatic changes, including developing countries like India as reported by Srivastava and Goel¹, should also account for the detailed features of solar radiation. The interaction of solar radiation with various atmospheric models is known to result in heating and cooling processes. The solar radiation flux incident on the mesospheric, stratospheric and tropospheric layers interact with bulk and minor constituents in the lower atmosphere undergoing significant variations in long and short time scales. Occurrence of special solar events like giant solar flares and atmospheric events like El Niño is known to

affect the climatic conditions. Detailed and extended observations using Earth Observing System (EOS) orbiting around the earth and ground-based grid observations have been analysed and synthesized for detailed understanding of various atmospheric phenomena². The incident solar radiation and other radiations emanating from the earth, ocean surfaces and the atmospheric trace elements with varying temperatures, humidity levels and the wind system are shown schematically in Figure 1. The depicted gaseous interactions in the presence of varying solar radiation are known to govern the long-term and short-term temperature

changes and the overall meteorological effects.

The paper by Srivastava and Goel clearly shows the outline of the analyses carried out by the authors and it is obvious that they do not classify the solar radiated spectrum with varying levels of solar activity indices. In their analyses, the net effects controlling the meteorological features are averaged out. Therefore they do not find any significant pattern of changes and correlation of their results with control parameters. Eddy³ originally demonstrated that the coldest temperature of Little Ice Age (LIA) arose as a consequence of reduced solar radiative output. This finding was