

N.5: Discussion meeting on indigenous development and production of high power lasers for various applications

Dr. V. K. Saraswat, Honourable Member, NITI Aayog, along with Shri K. N. Vyas, Secretary, Department of Atomic Energy and Chairman, Atomic Energy Commission, held a discussion meeting to chalk out a roadmap for a coordinated effort to develop high energy and high power laser systems. The key topics discussed were: i) Development of very high energy Nd:Glass laser with nanosecond pulses, ii) CW fiber lasers of kW power, and, iii) High power (~10 kW) free electron lasers.



Shri K. N. Vyas welcoming Dr. V. K. Saraswat.

At the outset of meeting, Shri S. C. Joshi, then Director, RRCAT, mentioned that the mandate of RRCAT was to develop lasers, particle accelerators and related technologies, and the Centre has the required expertise, infrastructure and space for taking up large projects of national relevance.



Dr. V. K. Saraswat discussing with Shri K. N. Vyas, Dr. A. K. Mohanty, Shri Debashis Das and Shri S. C. Joshi.

The development of very high energy Nd:Glass laser with nanosecond pulses was discussed. Presentations on the status of high energy Nd:glass laser activities at RRCAT were made and the phased plan towards developing a mega-Joule laser

facility with indigenous components was presented. This necessitates significant efforts towards development of few indigenous technologies, including technology for fabrication of high quality laser glass of large sizes, besides capability to develop large size optics, optical components with high damage threshold.

The development of high power Yb-doped CW fiber lasers of kW power within the country was also discussed. The two important components i.e. optical fiber and high power pump diodes required for high power fiber laser were deliberated in detail. It was strongly felt that technology for development of high power optical fiber, high power pump diode lasers and all other components required for the development of high power fiber lasers should be actively pursued. Discussions were also held on development of fiber lasers at 1550 nm and at ~2000 nm.

The high power (~10 kW) free electron laser (FEL) activity at RRCAT and a possible scheme to build high average power FEL was discussed, including the compact FEL-THz facility called Delhi Light Source at Inter-University Accelerator Centre (IUAC), New Delhi.



The discussion meeting at RRCAT on indigenous development and production of high power lasers.

Dr. V. K. Saraswat emphasized that the development of laser glass for high energy laser systems be done jointly with CGCRI for the mega-Joule phase of the High Energy Laser Project. Laser Science & Technology Centre (LASTEC), Delhi and Central Glass and Ceramic Research Institute (CGCRI), Kolkata may focus jointly on development of multi-kilowatt fiber lasers with pump diode developed by Solid State Physics Laboratory (SSPL), Delhi. He also requested SSPL to put together the plan for indigenous production of the pump diodes required for the multi-kilowatt fiber lasers.

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