

PREFACE

Beam Technology Development Group (BTDG) has decades of glorious research experience in Lasers, Plasmas, Electron Beam and Pulse Power systems. A need was felt to document this knowledgebase for the benefit of young colleagues, research scholars and academicians. Enthusiastic researchers of BTDG were motivated to pen down their work in a simplified and engaging manner. These technical articles were thoroughly reviewed by an expert group before being compiled into three volumes viz. (i) Laser and Plasma, (ii) Electron Beam and Accelerators and (iii) Pulsed Power and Applications.

It gives us great pleasure in presenting the first volume “Laser and Plasma”. The exciting work carried out in the field of lasers spanning from basic to applied research - cooling and trapping of atoms, atomic clock, atomic spectroscopy, development of novel laser systems, lasers with high spectral purity, application of lasers for isotope separation, for precise measurements of vibration, tilt or surface roughness etc - are covered in the first part. In the same light, the activity on plasma encompassing development of thermal and non-thermal plasma torches, cold plasma for biological applications, surface decontamination and plasma gasifier technology have been elucidated in this volume. Two distinctive articles by our senior mentors who have conceived and pioneered the research activities in BARC add technical flavor to the readers.

We are sure this volume serves the purpose of introducing current activities of BTDG in the areas of Laser and Plasma to the interested reader. We hope this book will remain as a treasure of knowledge for present and future generations and wish to revise and update the volumes periodically for the benefit of the techno-scientific community for faster pace of growth and success.

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