J. Plasma Physics (2005), *vol.* 71, *part* 2, *pp.* 99–100.
DOI: 10.1017/S0022377804003551 Printed in the United Kingdom

Editorial

It is a great pleasure to dedicate this special issue of The Journal of Plasma Physics to Professor R. Alan Cairns on the occasion of his 60th birthday on 12 March 2005. Considering Alan's international leadership in different areas of plasma physics, his colleagues have decided to honour him by producing this special issue which contains original articles written by some of his numerous friends who have worked with him in physics and shared different aspects of his life.

We have had the privilege of associating ourselves with Alan as his colleagues on many European projects as well as being members of the editorial board of The Journal of Plasma Physics. We have shared many memorable occasions in scientific life at the forefront of physics. At the University of St. Andrews Alan has created an excellent Centre for Applied Mathematics and Physical Sciences where a large number of visitors from different parts of the world meet to exchange and acquire knowledge which is of mutual benefit. With Alan, one has extremely productive and stimulating collaborations, leading to the publication of very high quality scientific papers in international journals of repute. Through Alan's exceptional ability as well as his unique and gentle style, both as researcher and teacher, his school has produced a cadre of bright physicists. It is immensely enjoyable to work with Alan.

Let us briefly describe some of Alan's most important achievements in Science. In the early seventies, he wrote an influential paper dealing with parametric interactions between laser light and plasma waves in an inhomogeneous plasma, a study which is invaluable for laser-plasma interactions and ionosphere modification experiments. The nonlinear problems are close to Alan's heart, in that he developed several theories for high-frequency radiation generation as well as for finite amplitude coherent nonlinear waves and structures, which are relevant to observations from laboratory and space plasmas.

Furthermore, his theories for radio-frequency plasma heating, driving currents and wakefields by radio-frequency waves and intense laser beams have wide ranging applications in tokamaks and plasma based charged particle accelerators. He has produced important seminal papers on the theory of mode conversion which has applications in many areas of physics. Alan has an impressive ability to switch from one field to another and to be able to make a significant contribution to whatever subject he chooses. Alan wrote an invaluable introductory book on Radio Frequency Heating of Plasmas (one of the Adam Hilger Series on Plasma Physics). He has edited Proceedings of the Scottish Summer School on Laser-Plasma Interactions and Generation and Application of High Powered Microwaves.

Alan is a very clear thinker and has a gift for seeing to the heart of a problem. He is a master at reducing a problem to its simplest form. He is never daunted by the apparent complexity of a mathematical problem and cheerfully sets about bringing it into a more tractable form. He always remains calm and has a great sense of humour. He is a person in whom one has complete confidence.

As an editor of The Journal of Plasma Physics he has introduced efficiency throughout his board members and brought the journal standard to a very high level. It is a pleasure and a privilege to have been associated with Alan over the last 25 years. We admire Alan's kind and generous personality, appreciate his warm

feelings towards his fellow physicists whom he always likes to support. Alan is not just a valued colleague but a good friend of the plasma physics community which now respects and honours him. We wish Alan a very long and healthy life and hope that he will continue enlightening us and showing us the proper direction in applied mathematics, numerical analysis, applied physics and any other areas of interest to him.

Padma Kant Shukla
Robert Bingham

https://doi.org/10.1017/S0022377804003551 Published online by Cambridge University Press