

Editorial

Dr. Suhas V. Patankar on his 65th birthday



The editors of the *International Journal of Heat and Mass Transfer* are pleased to pay homage to Dr. Suhas V. Patankar on the occasion of his 65th birthday. There is no person who has made a more profound and enduring impact on the theory and practice of numerical simulation in mechanical engineering than he.

In the era when many significant boundary layer problems no longer yielded similarity solutions, his co-invention of the Patankar–Spalding method provided the computational tools to deal effectively with such problems. That method not only enabled the efficient solution of external-flow boundary layers, but also it was used with equal effectiveness for internal flows for which the streamwise second derivatives could be neglected.

The intrinsic limitations of the boundary layer model prevented its use for the majority of relevant mechanical engineering problems. This realization focused attention on the need to solve the conservation equations of mass, momentum, and energy in which the streamwise second derivatives are fully retained. Such equations are classified as elliptic in the theory of partial differential equations. These equations require that boundary conditions be given on all the boundaries of the solution domain.

The main difficulty encountered in the construction of an accurate and efficient numerical solution method for the elliptic form is the need for proper coupling of the velocity and pressure fields. This was accomplished by Dr. Patankar's invention of the SIMPLER algorithm. This seminal invention evoked a torrent of complementary activity and resulted in many modifications and enhancements.

Although the Patankar–Spalding method and the SIMPLER algorithm are major milestones in Dr. Patankar's career, his unflagging creativity gave rise to many other ingenious ideas. At least of equal importance is his mentoring and nurturing of a generation of graduate students who are now the leading practitioners of numerical simulation.

All of Dr. Patankar's extraordinary achievements were accomplished with an innate low-key modesty. He was thus a role model for his students and colleagues both professionally and personally.

We salute him for his accomplishments and wish him well for the future.

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