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Dear Said

### **Pauca sed matura**

Hello Said, it's your good friend and colleague Mike Reeks here from Stroud in Gloucestershire England. It is such a great pity I cannot be with you in person to celebrate your work and remarkable achievements in multiphase flow research. I have known you as a friend and colleague for over 30 years since we first met at an ASME fluids meeting all those years ago, during which time your DNS studies of turbulent particle suspensions have been an inspiration to me, not only for the impact they have had on my own work, for the insights they have given but also for the way those studies have been carried out, for their clarity of purpose and painstaking precision, for the way they have been built upon and developed, and for the influence they have had on the way multiphase flow research is carried out.

It is true to say that whilst your publications are less prolific than those of others in the field, they are by far the most cited. In describing your own research output, you once mentioned to me the motto of the great mathematician Carl Friedrich Gauss, 'Pauca sed matura' (few but ripe): quality not quantity you might say. Many of your papers are seminal, much cited and of an enduring nature for their insights and the understanding they have provided for the way turbulence influences and controls the behavior of dispersed two phase flow, to the way the large and small scales of the turbulence transports and mixes the two phases and the way turbulence itself is modulated by two way coupling and controls drag reduction in a turbulent boundary layer. I recall how your DNS studies have revealed how micro-bubbles modify the structure of turbulence near the wall and how this leads to a substantial reduction in skin friction. This in my opinion was a quite remarkable study and a perfect example of how DNS can be exploited to understand and identify physical mechanisms relating to turbulence transport and mixing and two way coupling. Finally I recall the remarkable studies you made on the influence particles with sizes greater than the Kolmogorov length scale on turbulence modulation and to whether this depends on particle Stokes number. This finding has major implications on the understanding of numerical and experimental results of particle-laden turbulent flows

So finally in conclusion, your DNS studies and the remarkable insights they have given us on the role of turbulence in multiphase flows processes, have been a shining example to others working in the field of “**Pauca sed matura**”, quality not quantity. Without doubt your role as researcher and educator has been an inspiration to all of us, to your students and colleagues alike who have had the privilege of working and interacting with you throughout your long career. Enjoy this memorable occasion with all your colleagues, friends and family and pass on my regards to all that know me.

Prof. Michael W Reeks Ph.D C.Phys. F.Inst P, FAPS.  
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