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In Memory of Academician Wu Cheng-Kang

The passing of academician Professor Wu Cheng-Kang has weighed heavily the scientific community with deep sorrow for the loss of an intellectual giant and a role model of scholarship and honor.

I had the good fortune of hosting Professor Wu for a one-year sabbatical leave at Northwestern University back in the early 1980s. Shortly after he arrived, we were delighted to find that our visitor from China not only was a brilliant researcher, but he also had an impeccable command of the English language. In terms of the research he was actively involved in, one project that turned out to have an immense impact was the determination of the laminar flame speed of a combustible mixture. This data is perhaps the most important parameter characterizing the dynamics and chemistry of flames. The puzzle and challenge was that extensive experimentation since the early 1900s had yielded huge and inconsistent scatters. By recognizing the essential role of aerodynamic stretch and differential species diffusion on the structure and dynamic of flames, the study beautifully demonstrated that stretch-free flame speeds could be determined by systematically subtracting out of their influence. This work, published in a well-cited paper in 1985, "On the determination of laminar flame speeds from stretched flames" in the *Proceedings of the Twentieth International Symposium on Combustion*, opened a flood gate in the systematic and meaningful study of flames and the embedded chemical kinetics. For example, it allows the determination of the critical states of extinction and flammability limits of combustible mixtures, the meaningful extraction of chemical kinetic information from laminar flame speed data, and the systematic formulation of complex fuel blends. Indeed, modern combustion research and literature are permeated with advances that can be traced in one form or another to the information acquired through such stretch-free flame data.

The above work is of course only a fraction of the mountain of contributions that Professor Wu had made in the broad landscape of thermal sciences. His mastery of the subjects and his creativity in blazing new paths are legendary in the global scientific community. Through our association, I have also come to admire him as a scholar and gentleman. His mild manner and sincere modesty have forever inspired us all – not just how to be a scholar, but also how to live with grace.

Rest in peace, Professor Wu. Thank you for the knowledge and enlightenment you have bequeathed us, and be assured that we will carry on your legacy with gratitude and honor.

A handwritten signature in cursive script, reading "Chung K. Law".

Chung K. Law

Robert H. Goddard Professor, Princeton University

Member, US National Academy of Engineering

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