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In Honor of Michael J. Antal



This special issue honors Michael J. Antal, Jr. for his invaluable contributions to the research and development of biomass utilization. He passed away at the age of 68 on October 21, 2015 due to cancer.

Michael was born in 1947, in Monroe, Michigan. His family moved soon to New Jersey, where he attended elementary school and high school. He received an applied baccalaureate degree with distinctions in Dartmouth College. This was followed by studies in the Harvard University where he received MS in Applied Physics (Quantum Mechanics and Electromagnetic Theory) and PhD in Applied Mathematics (Numerical Analysis and Quantum Mechanics).

In 1973, he started his professional career at Los Alamos National Laboratory as a staff member of the Thermonuclear Weapons Physics Group. However, his research interests soon turned to topics related to the sustainable future of mankind. In 1976, he published his first pioneering work on the peaceful use of solar energy in the production of fuels from biomass and municipal wastes. After serving as an assistant professor at Princeton University, he was selected as the recipient of the Coral Industries Endowed Chair at the University of Hawaii in 1982, where he became a full professor and the Coral Industries Distinguished Professor of Renewable Energy Resources. He achieved outstanding results in practically all areas of biomass research and development, including the pyrolysis of biomass materials, and the formation of charcoals through pyrolytic reactions. This spring the Scopus database reported more than 10600 citations for 175 articles published with his authorship¹. The corresponding *h*-index was 54. A selection of his widely cited works can be found in the *Supporting Information*.

To honor his outstanding achievements in biomass R&D, authors from five continents dedicated valuable research papers to this special issue. The list of authors include many of Michael's good friends and cooperation partners from the last four decades.

Two of the articles cover a wider range of Michael's professional activities. Jacques Lédé reviewed Michael's pioneering works in the period 1976-1989,³ while another article describes a US – Hungarian collaboration in which Michael participated for three decades, until his very last days.⁴ Michael himself

is a posthumous coauthor in two works of this issue which reflect his two-decade cooperation with NTNU and SINTEF in Norway.^{5,6}

Four works deal with the theoretical aspects of biomass conversion.⁷⁻¹⁰ Five articles discuss various hydrothermal conversion methods in sub- and supercritical water.¹¹⁻¹⁵ The largest group of papers in this issue deal with biomass pyrolysis.^{16-21,29} Several articles aimed at producing valuable gases from biomass,^{10,22,23} and report researches on catalytic reforming.^{24,25} The works of Pedersen et al.²⁶ and Barta-Rajnai et al.²⁷ deal with the properties of specific biomass fuels. Yanagida et al. studied the use of rubber seed oil for biodiesel production.²⁸

Finally a few words about Michael as a person. He was particularly open-minded. He persistently worked on important research ideas for decades, turning to it back and back again, whenever new aspects emerged. He established numerous national and international R&D collaborations of which three have lasted for decades. In this respect the highest number of articles came from the groups of his Japanese friends and cooperation partners.^{10,12,14,22,23,28}

After Michael's death, his friends collected a series of photos about him, from 1980 till 2014. One photo is particularly characteristic for his keen interest in science. It is presented here. It shows him on a touristic trip, sitting in the grass for a rest, and reading there a book about the physics of the universe.

Gábor Várhegyi



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Notes

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

The photos shown here were taken 3-4 years before Michael's death. (The 1st and 3rd photos were taken by the author; the source of the 2nd photo is indicated in its legend.)

ASSOCIATED CONTENT

Supporting Information

The Supporting Information is available free of charge on the ACS Publications website at DOI: 10.121/acs.energyfuels... It contains a selection from Michael's publications.

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