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Mondal Sumona* (smondal@clarkson.edu), 8 Clarkson Avenue, Potsdam, NY 13699, and **Bo Zhang, Kathleen R Fowler** and **Stefan Grimberg**. *Sensitivity Analysis of Anaerobic Digestion Model No.1 (ADM1) Using Latin Hypercube Sampling: A case study in dairy manure digestion.*

Anaerobic Digestion Model No.1 (ADM1) has been extensively used in modeling the Anaerobic Digestion (AD) process after its publication. Various biochemical kinetic parameters have been calibrated in different case studies to improve model accuracy. However, model calibration has been commonly empirically not following a logical mathematical process. In addition, biodegradability is considered to be the most important characteristic of feedstock; however, due to the absence of standard procedures in measuring the soluble inert and particulate inert concentrations, several methods have been devised by different researchers to estimate their concentrations. In order to facilitate the application of ADM1 in simulating dairy manure digestion, a method was developed earlier to calculate the soluble inert and particulate inert concentrations based on typical lab measurements with slight modification of the model by introducing two new stoichiometric parameters. The sensitivity of two newly introduced parameters, together with 32 biochemical kinetic parameters, were estimated using latin hypercube sampling based sensitivity analysis technique. (Received September 22, 2010)