

Applicant: Calistus Ngonghala
Mentor: Dr. Kenneth Showalter

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January 20, 2007

Dear Selection Committee:

I am writing in support of in his application to attend the "US-Africa Advanced Studies Institute on Mathematical Modeling of Infectious Diseases in Africa" and the follow-up workshop.

Mr. Ngonghala is currently carrying out his Ph.D. studies in mathematics with me at West Virginia University. He joined my group this year after completing his M.Sc. in Mathematics at the University of Buea, Cameroon. He studied with Professor Gideon A. Ngwa and his thesis was entitled "An Age Structured Model for the Dynamics of Endemic Malaria Transmission with Varying Populations." Mr. Ngonghala's thesis work resulted in a publication (Gideon A. Ngwa, Ngonghala C. Ngeh, Sama Wilson N. Biginia, "A Model for Endemic Malaria with Delay and Variable Populations," Journal of the Cameroon Academy of Sciences, **1** (3), 127 (2001)).

Mr. Ngonghala is a very good student. He received the "Best University of Buea Graduating Student in M.Sc. Mathematics" award for the class of 1999/2000, and he received the University of Buea Dean's List Award for four semesters. He has completed one semester of course work in his Ph.D. program in Mathematics at West Virginia University, and he received A's in all three of his classes. I anticipate that Mr. Ngonghala will develop into one of our top students in the Department of Mathematics Ph.D. program.

Mr. Ngonghala is carrying out his Ph.D. research with me in the Department of Chemistry, West Virginia University. The focus of our research has primarily been on pattern formation and traveling waves in reaction-diffusion systems. A number of high-level publications have resulted from my program at West Virginia University (3 in Science, 4 in Nature, and 14 in Physical Review Letters); research publications and projects can be seen at our internet site (<http://heracles.chem.wvu.edu/>). We have recently initiated a program aimed at investigating networks with local and nonlocal links in excitable media, which is relevant to models of disease spreading. Two papers have appeared on this topic ("Spatiotemporal networks in addressable excitable media," Phys. Rev. Lett. 95, 038306-1-4 (2005); "Spatiotemporal Dynamics of Networks of Excitable Nodes," Chaos 16, 015110-1-9 (2006)). Mr. Ngonghala has started working on this project and we anticipate that he will use his expertise in ODE models of the dynamics of malaria transmission to develop PDE models related to our network models. His participation in the "US-Africa Advanced Studies Institute on Mathematical Modeling of Infectious Diseases in Africa" will be very beneficial in our efforts to develop models that are useful for understanding disease spreading. Mr. Ngonghala will continue with this research effort as well as develop new research projects in the course of his Ph.D. dissertation studies with me at West Virginia University.

I give Mr. Ngonghala my highest recommendation and hope that you will approve his application

to participate in the "US-Africa Advanced Studies Institute on Mathematical Modeling of Infectious Diseases in Africa." If I can be of further assistance please contact me at 304-293-3435 (x6428) or at my e-mail address (kshowalt@wvu.edu).

Sincerely,

Kenneth Showalter
Professor and C. Eugene Bennett
Chair in Chemistry

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