INSTITUTO DE ECOLOGÍA, A.C.
RED DE ESTUDIOS MOLECULARES AVANZADOS

January 12, 2017

Prof. Ignacio González-Martínez, Editor-in-chief

Journal of the Mexican Chemical Society
Department of Chemistry,
Universidad Autónoma Metropolitana,
Unit Itztapalapa
Mexico

Dear Dr. Ignacio González-Martínez,

Enclosed please find the manuscript entitled: "*Microencapsulation of potassium phosphate in chitosan and the effect of spray drying operating variables on the particle size*." coauthored by Enrique Colorado-Olivares, José Luis Olivares-Romero, and Felipe Barrera-Méndez, which we would like to submit for publication as a research article in the *Journal of the Mexican Chemical Society*.

Fertilizers play an important role to overcome the phosphorus deficiency in most natural or agricultural soils. In general, 60% to 90% of the total applied fertilizer is lost and only 10% to 40% is taken up by plants. The application of fertilizers in excess to compensate the low uptake by the plants is costly and may have other environmental impacts. Due to deficient uptake of these chemical fertilizers by plants, they reach into water bodies through rainwater, cause eutrophication and affect living beings. The paper submitted describes the formulations and process parameters used to encapsulate phosphate based fertilizers in a chitosan matrix in order to obtain a fertilizer with controlled release, as well as the antifungal properties of the chitosan. This study found the statistical effect of such parameters used in the encapsulation process on the micro capsule diameter in order to measure the release profile of powders with different particle sizes, resulting in a slower release for the smaller particle sizes. The reduction in particle size diminishes the encapsulation efficiency by a small percentage that can be neglected.

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Therefore, this report will encourage the development of other encapsulated fertilizers to be used in agriculture. A wide audience of scientists interested in nanotechnology, chemistry, bioorganic and agricultural chemistry and other areas of science will appreciate our results. We believe that this manuscript is appropriate for publication in the *Journal of the Mexican Chemical Society*.

Finally, we warrant the article is original and not published previously, that it is not under consideration for publication elsewhere, and that its publication is approved by all authors. If accepted, the article will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. All persons appropriate and none inappropriate are included as co-authors of this work. None of the authors have a conflict of interest in the publication of this work.

Suggested suitable reviewers for our communication:

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Thank you for considering this manuscript. We look forward to your response.

Sincerely,

Felipe Barrera-Méndez, Ph. D.

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