

## Answers to Dr Zoltán Varga

First of all, I would like to thank you for the revision, and the very useful comments and suggestions. Please see the responses to the comments and remarks in the following

- 1) It was not clearly explained what was the source of the water(steam) whose presence was presumed by the author

*Thank you very much for the remark. Water should be produced by the cracking of raw materials (e.g. dehydration of the carboxylic acids obtained from PET pyrolysis).*

- 2) The author did not define what catalyst was the most favourable taking account the yield and composition of the products

*Thank you very much for the remark. Among the different used catalysts Ni/ZSM-5, Ce/Ni/ZSM-5 and La/Ni/ZSM-5 were the most favourable catalysts*

- 3) It would have been expected to discuss the correlation between the properties of second metals (electron structure, size etc.) and the yields/properties of the reactor product

*Thank you very much for the remark. Based on the electronic configuration, Ce and La have higher atomic number compared to other promoters (Ca, Mg and Mn). On the other hand, Ce and La have empty "d" orbitals which attract more reactant and resulting in higher reaction rate. This explained the higher yields ( $H_2$  and gases) in the product yields over these metals in comparison to other used metals.*

- 4) Author obtained different results in vertical and horizontal reactors, but the reason of the differences was not explained

*Thank you very much for the remark. The differences may be attributed to the different configuration. Among other things, differences in flow conditions, heat transport, and unit size affected the results mostly.*