



# **Efficiency of degrading packed bed bioreactors.**

## **DISCUSSION OF COMMENTS**

### **MSc (Chemical Engineering) DISSERTATION**

*Prepared by*

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*Submitted to*

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**1. DISCUSSION OF COMMENTS**

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## 1. DISCUSSION OF COMMENTS

Table 1 below indicates the page, comment and correction made in accordance to the external examiners comments.

**Table 1: Discussion of comments**

<b>Page</b>	<b>Comment</b>	<b>Correction</b>
iv	Change professors to singular	Professor
8	Define monovalent	Sulfides and monovalent ions in current research cannot be treated.
31	Change heading	Materials and Methods
35	Add the manufactures as well as the country in which the Hanna HI 9511-5 probe was made	Hanna Instruments HI 9511-5, Italy
36	Add the manufactures as well as the country in which the Macherey-Nagel litmus paper was made	Macherey-Nagel, German litmus paper
45	Explain "Soillab" in the graph	Soillab represents the laboratory that was used to test the permeability of the different carbon sources.
52 and 53	Don't split permeability table	Table was split over two pages but each page was given a separate figure title.
59 and 60	Don't split permeability versus sulfate table	Table was split over two pages but each page was given a separate figure title.
67 and 68	Don't split permeability versus iron tables	Table was split over two pages but each page was given a separate figure title.
74 and 75	Don't split permeability versus pH table	Table was split over two pages but each page was given a separate figure title.
78	Explain (based on stoichiometry) why manure is more effective in correcting the pH than other substrates.	Manure has lots of Sulfure Reducing Bacteria (SRB) since it comes from ruminant guts. This means that $\text{SO}_4^{2-}$ rapidly increases. Typically this is accompanied by a rise in pH as $\text{SO}_4^{2-}$ is the conjugate base of $\text{H}_2\text{SO}_4$ . This causes Iron to precipitate; this system is thus a victim of its own success because a rapid pH increase leads to clogging. In other systems, SRB are not as prevalent and hence a rapid pH increase and subsequent iron precipitation and clogging are not observed to the same extent.