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AVT-Bioverfahrenstechnik – Biochemical Engineering

Introduction

Mixing plays a very important role in many industrial applications, especially in chemical engineering and chemical processes, for instance, pharmaceuticals, food production, as well as in other major chemical industries. Effective mixing is a significant step in chemical processes. Good mixing in the reactors usually enhances the productivity.

Due to easy-handling and cost-reducing characteristics, shake flasks are very widely used in biotechnological researches and bioindustries for screening and bioprocess development. They are frequently used for culture of microorganisms, for example, bacteria, yeast, fungi, and animal cells. It is very important for scientists and engineers to understand the scientific characteristics of shake flasks.

Materials and Methods

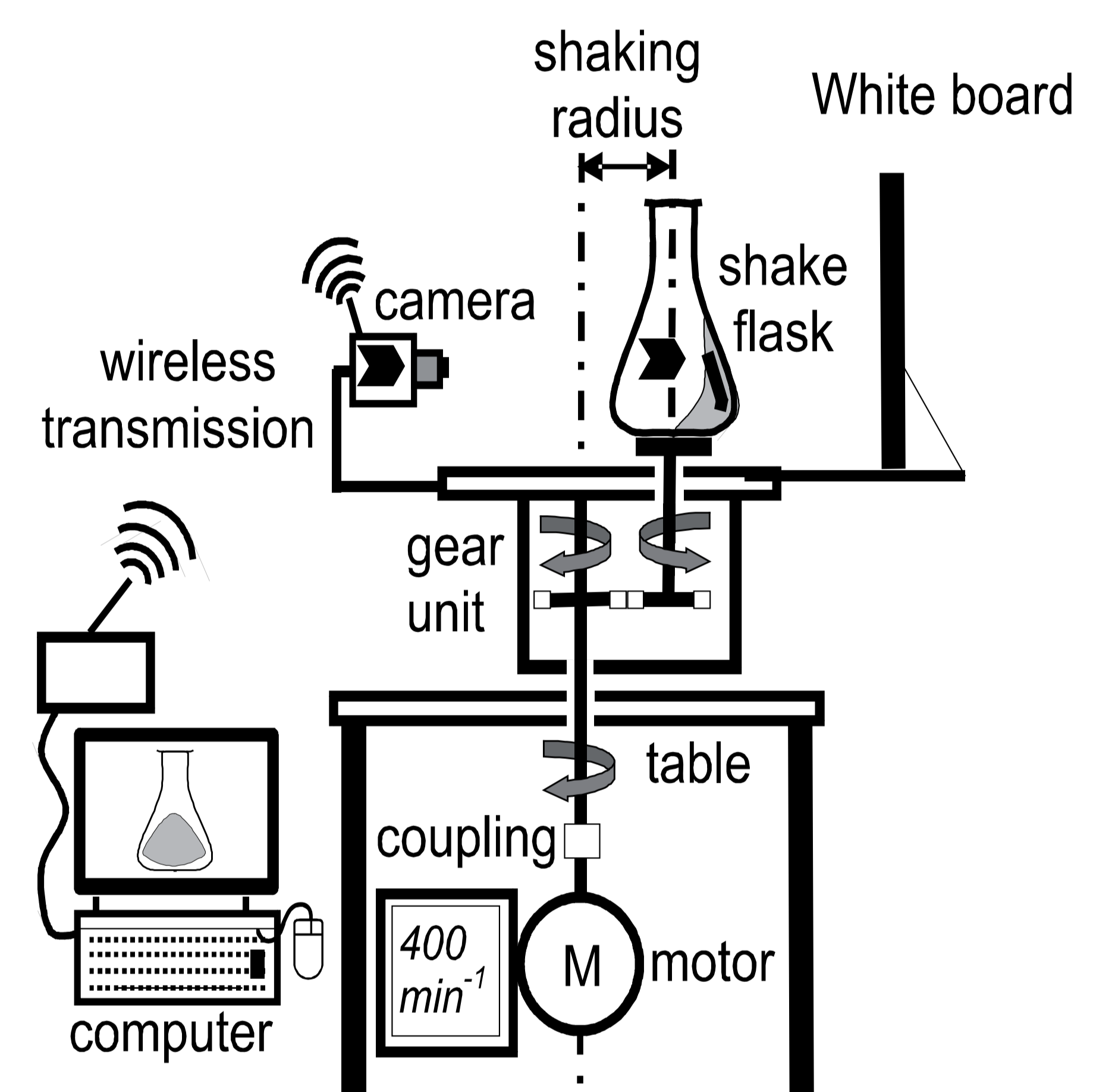
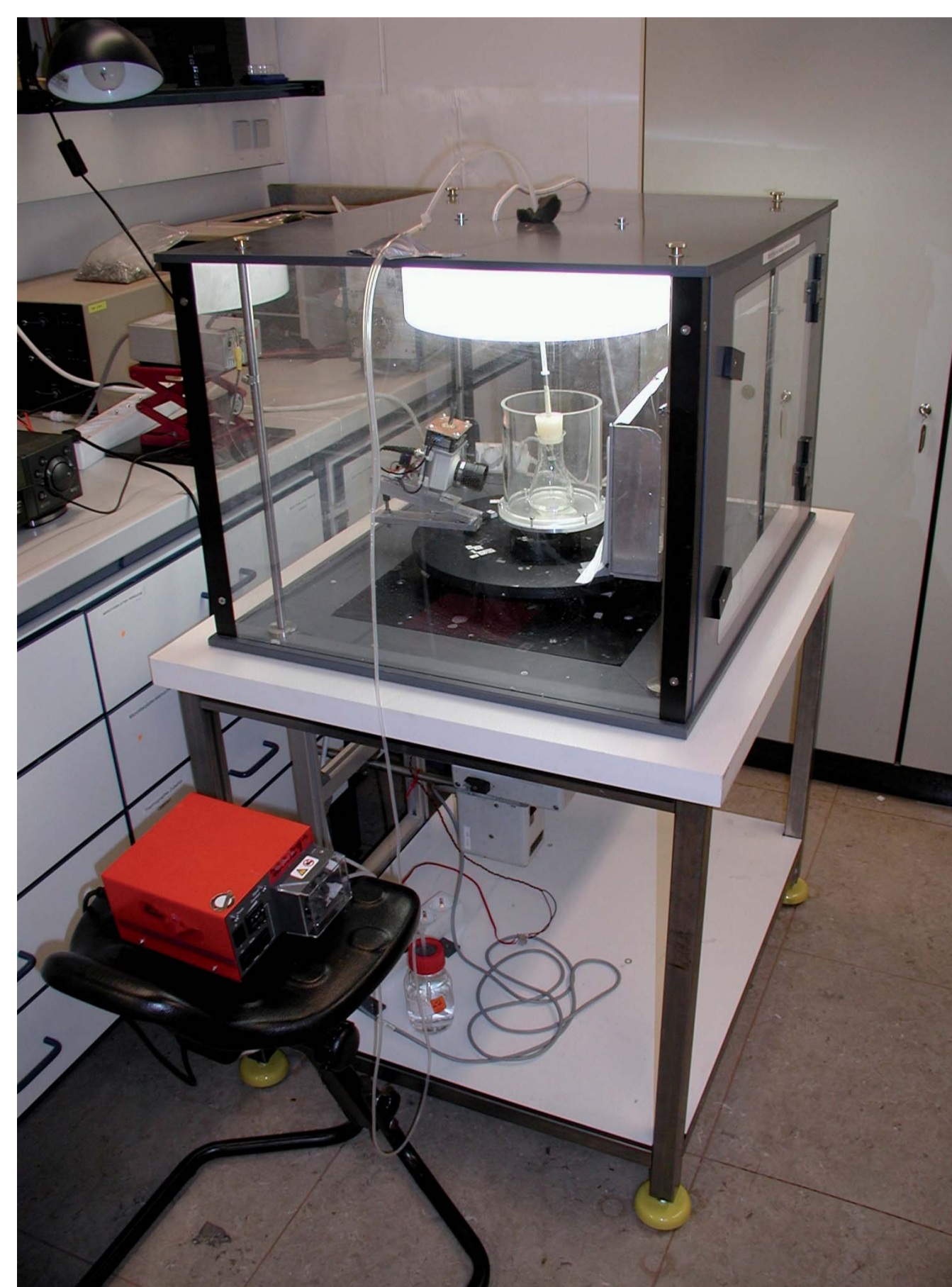
In this study neutral reaction with bromothymol blue as colour indicator is utilized to determine mixing time.



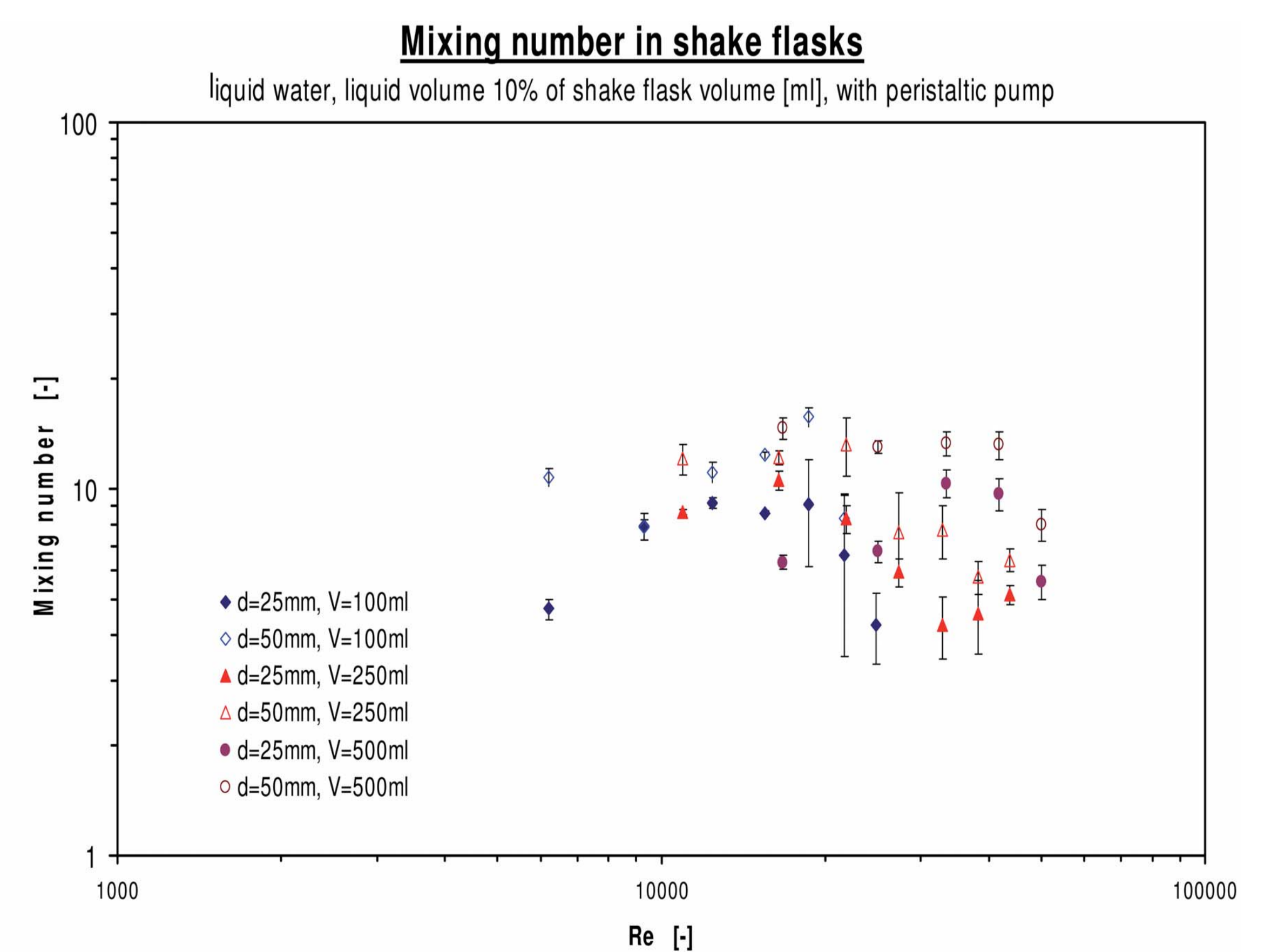
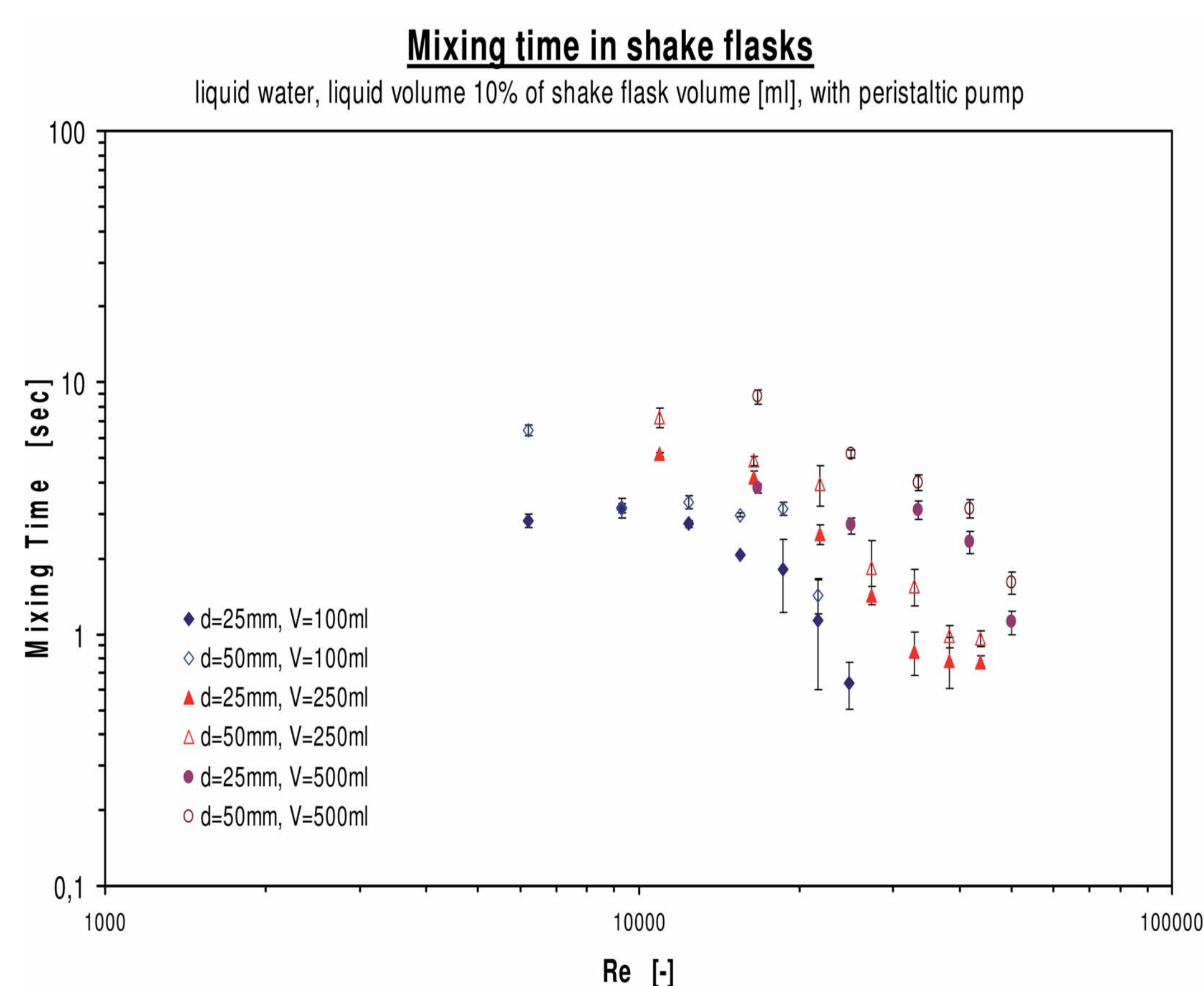
pH 5.5 5. 6.0 7. 7.5

In addition, a rotating camera is used to observe the movement in shaking flask.

The mixing time was defined as the time between the addition of acid and disappearance of the last trace in the shake flask.



Results



References

Büchs, J. 2001. Introduction to advantages and problems of shaken cultures. *Biochemical Engineering Journal* 7(2):91-98.
Hiby, J. W. 1979. Definition und Messung der Mischgüte in Flüssigen Gemischen. *Chemie-Ingenieur-Technik* 5(7):704-709.