

# **46** **Advances in Biochemical Engineering/ Biotechnology**

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Managing Editor: A. Fiechter

# Modern Biochemical Engineering

Guest Editor: T. Scheper

*Dedicated to Prof. Karl Schügerl  
on the occasion of his 65th birthday*

With contribution by

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*To  
Professor Dr. Karl Schügerl  
on his 65th Birthday*

*On 22nd June 1992, Karl Schügerl will spend his 65th birthday in the midst of a large assembly of students, PhD students and colleagues in the Faculty of Science. For him, as well as for the Institute of Chemical Engineering of the University of Hanover, it is a day of honour. Those involved in chemical and biological process engineering will join in our congratulations to him on the day, and in our best wishes to him for a happy future.*

*Karl Schügerl has built up an exemplary career, which began after he completed his chemical engineering studies at Budapest University in 1949. Since that time he has continued to devote himself to research, either in industry or at university. The first steps in his career were in organic chemistry at Budapest University (1949–52); experimental institutions in the organic-chemical industry, Budapest (1952–55); a design studio for bioplant (1955–56) and at Riedel de Haen AG in Seelze, Germany (1956–58). He later completed his PhD degree at Hanover University in the kinetics and rheology of fluid bed systems and spent three years of post-doctorate work at the Universities of New York (high-temperature pyrolysis of hydrocarbons) and Princeton in the USA, where he was closely involved for one and a half years in fundamental investigations of molecular beams for aerospace research. Soon after his return to Germany, he qualified for inauguration as a lecturer in Hanover and shortly afterwards accepted a professorship in process engineering at Braunschweig University. In 1969, he finally returned to Hanover University. In due course, the purposeful nature of his work developed the Institute for Chemical Engineering into a research institute concentrating on biological process engineering. His early work on high-temperature pyrolysis of olefins and on molecular beam ultrasonic applications opened up typical problem areas relating to mass transfer in chemical processes. Hydrodynamics in single drops, three-phase*

*fluid beds, cryosorption, residence time distributions, test material mixing, and flash photolysis were typical fields of work in the 1960s and 1970s. Hundreds of experimental publications bear witness to his comprehensive knowledge in these fields. The urge towards constantly new fields of work led Karl Schügerl in 1975 into biotechnology, in which today his institute occupies a dominant position. It has taken a leading role particularly in on-line measurement and control of biological process engineering. Karl Schügerl was one of the first chemical engineers in Germany to conduct extensive analyses of biological aspects. These also include hundreds of papers in the biological field which omit hardly any of the major measuring techniques or process applications. Bacteria, yeasts or fungi are the main agents in this highly developed discipline. New solutions to the problems of future improvements in performance are sought using the most modern methods of analysis and software. His present areas of interest have recently even extended beyond biological process engineering and today cover environmental technology, bio-sensors, the disposal of highly polluted effluent, soil renewal and hydrometallurgy.*

*Karl Schügerl has always refused illustrious offers from renowned universities, thereby dedicating himself to developments in Hanover; this was certainly the result of his important recognition that only determined efforts would lead to progress in the rapidly developing field of biotechnology.*

*It would seem significant in this connection that he willingly accepts many calls on his time to act as consultant and expert. He acts as adviser to countless institutions both in Germany and abroad in the academic and public domain, where his reliable advice and support are highly esteemed. Between 1982 and 1986, he administered the department for biological process engineering at the GBF (Association for Biotechnological Research) in Braunschweig.*

*Today, 700 publications, including five books, bear witness to the iron discipline by which Karl Schügerl has developed his view of things. Nevertheless he has remained an approachable and cherished colleague, who always finds time for scientific requests. This also holds true for the next generation of scientists for whom he not only proposes attractive subject areas, but also provides support as a helpful adviser in professional and personal problems. There are many of his former PhD students who today are themselves in academic positions,*

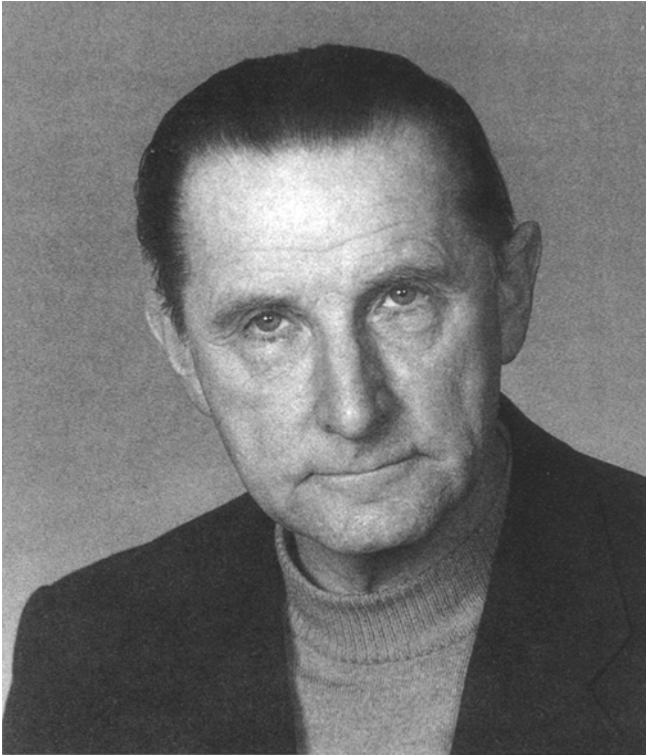
*and who are able to pass on the enthusiasm for science of their former teacher to the coming generations. In industry too, graduates from Hanover have become successful and, with their knowledge and skill, are able to support their companies in these times of stiff economic competition.*

*Recently, the academic and scientific services of our honoured colleague have been recognized by Budapest University with an honorary doctorate.*

*This present publication allows the authors to add their appreciation. Their contributions demonstrate the wide interests of Karl Schügerl, which cover many subsidiary fields. We hope in this way to give him great pleasure and thereby to demonstrate the high esteem in which we hold him.*

*Those who are familiar with the great creative powers of this gifted scientist cannot imagine any slackening of his efforts in the promotion of research and education. We offer our good wishes for his health and the best conditions for the accomplishment of his plans.*

*Armin Fiechter*



*Prof. Dr. Karl Schügerl*



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|                              |  |
|------------------------------|--|
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| INDEX <i>(name)</i>          | same as “DIR”  |
| CD <i>&lt;name&gt;</i>       | changes to directory “name”,                               |
| SEND <i>&lt;filename&gt;</i> | invokes a message with the file “filename”,                |
| GET <i>&lt;filename&gt;</i>  | same as “SEND”.  |

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