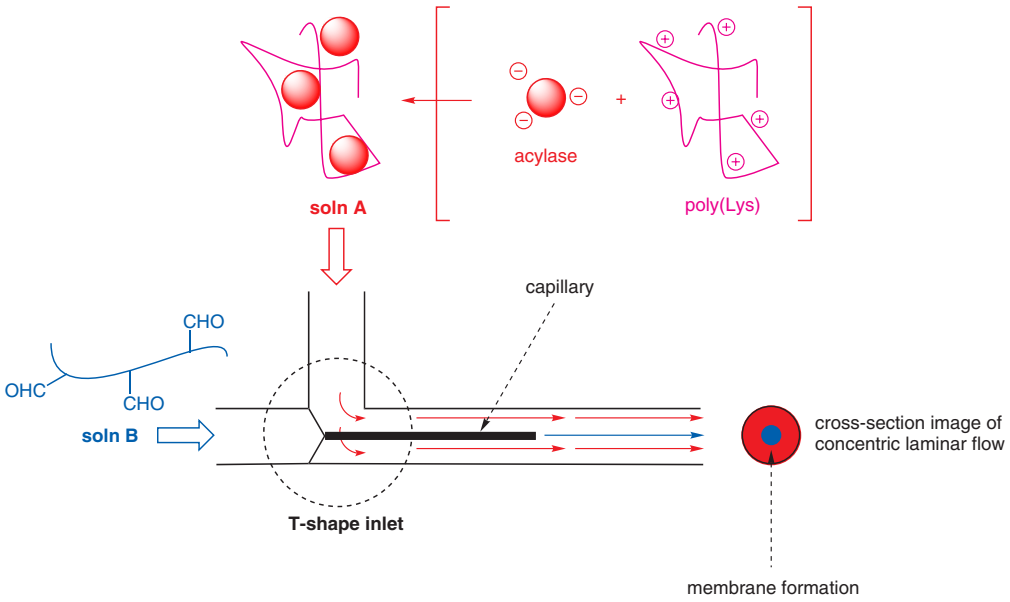
T. HONDA, M. MIYAZAKI,* H. NAKAMURA, H. MAEDA* (NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY, SAGA AND KYUSYU UNIVERSITY, FUKUOKA, JAPAN)

Facile Preparation of an Enzyme-Immobilized Microreactor Using a Cross-Linked Enzyme Membrane on a Microchannel Surface

Adv. Synth. Catal. **2006**, *348*, 2163-2171.

Enzyme-Immolbilized Microtubing



Significance: An enzyme-membrane was deposited on the inner surface of a microtubing via cross-linking of poly(Lys) matrix with glutaraldehyde and paraformaldehyde (crosslinker) under laminar-flow conditions. Concentric laminar flow was generated in a PTFE tubing (500 micrometer i.d.) by the introduction of the outer and center streams through the T-shape inlet and the silica capillary, respectively. When the phosphate buffer solutions of acylase-poly(Lys) aggregate and the crosslinker aldehyde were used as the outer and center streams, the crosslinking took place at the interface of laminar flow to form the enzyme membrane on the inner surface of the PTFE microtubing. The resulting enzyme-immobilized micro-tubing was used as a flow reactor exhibiting the acylase activity.

Comment: The formation of an insoluble crosslinked polymer was achieved in a *ship-in-a-bottle* manner at the interface of laminar flow streams. Use of a multi-stream laminar flow for the localized formation of an insoluble salt inside a half-pipe-shaped microchannel has been originally reported by Whitesides and co-workers (*Science* **1999**, *285*, 83-85) and recently applied for the formation of a polymer membrane (e.g. 6,6-nylon) by Kitamori and co-workers (*Anal. Chem.* **2003**, *75*, 350-354).

SYNFACTS Contributors: Yasuhiro Uozumi, Hiroe Takenaka
Synfacts 2007, 2, 0217-0217 Published online: 23.01.2007
DOI: 10.1055/s-2006-955779; **Reg-No.:** Y16406SF