Development of microchannel reactor for hydrogen catalytic combustion

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Design of microchannel reactor and experiments for hydrogen catalytic combustion to achieve zero emissions and control explosive mixture was studied. This reactor is less then $50cm^3$ and able to combust hydrogen up to $4.2 X 10^{-2}$ mol min^{-1} without hot spots or explosion and was able to increase reactor temperature up to 850℃. Then the use of this reactor in catalytic combustion for explosive mixture and/or hydrocarbons will be expected to provide safety and uniform temperature distribution in a reactor besides low emissions. Furthermore, the use of this reactor is anticipated that it can be applied to a compact fuel process for PEMFCs.