

Bio-hydrogen fuel production

At the University of Glamorgan, the United Kingdom, researchers are developing a process for sustainable bio-hydrogen production. This project is aimed at optimizing the fermentative production of hydrogen to produce low pollution gaseous biofuels.

Successful results were achieved during a six month EPSRC-funded project, in collaboration with a leading Japanese university. A fermentative process based on a mixed culture obtained originally from collaborators in Japan has been operating continuously under conditions likely to be found in an industrial-scale plant and is fully monitored to facilitate further research. By lowering the hydrogen partial pressure, specific hydrogen production was doubled from 1.446 ccs of hydrogen/ minute per gram of biomass to 3.131 ccs of hydrogen/ minute per gram of biomass. Optimal values for pH, iron and sulphur were evaluated through batch studies. In addition, the percentage of hydrogen in the off-gas was successfully monitored on-line using a Proton Exchange Membrane fuel cell.

Further research has been carried out with financial support provided by an EPSRC grant for three years. *Contact: Prof. D. L. Hawkes, School of Technology, University of Glamorgan, Pontypridd CF37 1DL, the United Kingdom. Tel: +44 (1443) 482 212; Fax: +44 (1443) 483 382; E-mail: dlhawkes@glam.ac.uk; Website: www.glam.ac.uk.*