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**A continuous system for biocatalytic hydrogenation of CO<sub>2</sub> to formate**

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**Abstract**

In this work a novel bioprocess for hydrogenation of CO<sub>2</sub> to formate was developed, using whole cell catalysis by a sulfate-reducing bacterium. Three *Desulfovibrio* species were tested (*D. vulgaris* Hildenborough, *D. alaskensis* G20, and *D. desulfuricans* ATCC 27774), of which *D. desulfuricans* showed the highest activity, producing 12 mM of formate in batch, with a production rate of 0.09 mM h<sup>-1</sup>. Gene expression analysis indicated that among the three formate dehydrogenases and five hydrogenases,

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