

Biocatalytic Conversion of waste CO gas to value-added products

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In the steel industry, a considerable amount of by-product gas is being generated, and since it contains a relatively high concentration of toxic carbon monoxide to be discharged, considerable efforts and costs need to treat waste gas stream line. However, considering the enormous amount that is generated by millions of tons per year, it is urgent to develop a technology to make it a useful value-added compound. In this presentation, we will introduce a method of converting carbon monoxide to useful substances such as formic acid using biocatalysts including enzymes and microorganisms. When water molecules are added to carbon monoxide to form a hydrated form of the formic acid, the theoretical yield is as high as 1.64. When the gaseous carbon monoxide is converted into a liquid state, it significantly reduces the toxicity of carbon monoxide and is much easier to store and transport, which can be a groundbreaking technology to create a new refinery based on by-product gas. In this presentation, we present the possibilities and problems of these technologies and suggest ways to overcome these problems in the future.