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Biogas and carbon dioxide recycling for renewable sources of energy and chemicals

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One of the most important reason of use of biomass as a renewable energy source is the fact that the present biomass is almost completely recyclable, as the released carbon dioxide by combustion is converted present vegetation by the by photosynthesis. A good example for this approach is the treatment of organic waste to produce biogas. The latter is one of the mostly used as a fuel but its application as a feed stock for chemicals is also considerable.

On the other hand the inevitable release of carbon dioxide could be remediated after its conversion into chemicals (e.g. synthesis gas. methanol, formic acid) and to fuel, like methane by chemical, electrochemical or biotechnological processes. There is an opportunity to use it in new fuel cell applications. The present work summarizes the recent author results on biogas production from various raw materials and carbon dioxide recycling to chemicals, fuels and energy. Besides manure and pultry litter as feedstocks for biogas lignocellulosic residues are considered. Carbon dioxide recycling to organic products were tested under fuel cell conditions and electrolysis.

Biography:

Venko Beschkov, PhD, DSc was born in 1946 in Sofia, Bulgaria. He has got his PhD in 1978 and his DSc degree in 1996 in the Bulgarian Academy of Sciences. His present interests are chemical and biochemical processes for environment protection and for utilization of renewable energy sources. He participates in 36 scientific projects, supported by different sources, as well as in 20 applied projects. He published over 200 scientific papers, 2 monographs and 7 chapters in selected issues. Over 1400 citations of his papers have been noted (h-index=22.)Gindex=35). He has been Head of the Institute of Chemical Engineering at the Bulgarian Academy of Sciences for 21 years (1993/2014) and deputy-minister of environment in the Bulgarian government (1991/92).

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