



## Fast, Efficient, Small Scale Conversion of Biomass to Syngas

Particles of solid nonvolatile carbon and hydrogen containing fuel, such as cellulose, hemicellulose, starch, lignin, and their monomer components, can be rapidly volatilized by catalytic partial oxidation to produce hydrogen and carbon monoxide in high yields with a total time in the reactor of less than 50 milliseconds.

The process is suitable for small scales allowing for the production of syngas on a distributed basis at the source of the biomass. This technology can potentially be incorporated into a portable device that can be used where the biomass is readily available, eliminating the costs of transporting the biomass to a centralized processing location.

A reactor produces very high yields of syngas within tens of milliseconds when the biomass and oxygen are exposed to the specially designed catalyst with no external energy input required (autothermal).

### Features & Benefits

- High yields ( >99%)
- No solid carbon (char) formation
- Fast reaction time (< 50 ms)
- Reduced biomass transportation costs
- Compatible with multiple feedstocks including solid or liquid biomass
- Feedstock can contain moisture
- No required heat inputs
- Operates at atmospheric pressure

### Technology Status

Proof of concept has been experimentally demonstrated in laboratory. High yields of hydrogen and carbon monoxide have been experimentally demonstrated using various solid, non-volatile fuels, including cellulose and starch.

### IP Status

U.S. Patent Pending

### Primary Inventor

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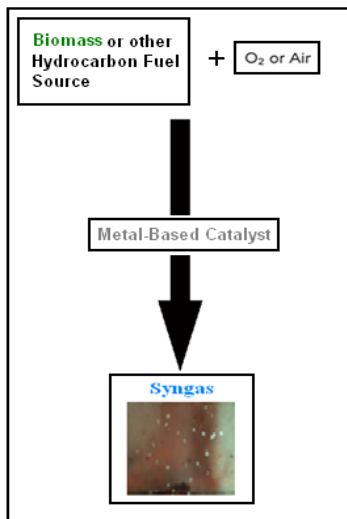
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