Classification for FUPROC

1 Feedstock and Product Fuels

1.10 Biomass

- 1.10.10 Plant/woody biomass
- 1.10.20 Pelletised biomass
- 1.10.30 Algae (excluding growth)
- 1.10.40 Animal-derived biomass

1.20 Wastes (excluding collection)

- 1.20.10 Civil wastes (RDF, plastic, tyres)
- 1.20.20 Sludge
- 1.20.30 Industrial wastes
- 1.20.40 Ash utilization

1.30 Coal (excluding mining)

- 1.30.10 Peat
- 1.30.20 Brown coal and lignite
- 1.30.30 Sub-bituminous coal
- 1.30.40 bituminous coal
- 1.30.50 Anthracite

1.40 Liquid fuels

- 1.40.10 Traditional liquid fuels
- 1.40.20 Biofuels
- 1.40.30 Synthetic liquid fuels

1.50 Non-carbon-containing fuels

- 1.50.10 Hydrogen
- 1.50.20 Ammonia
- 1.50.30 Other fuels

1.60 Other energy or carbon sources (excluding mining)

- 1.60.10 Shale
- 1.60.20 Petroleum-derived
- 1.60.30 Natural gas (including biogas)
- 1.60.40 Tar/oil sand
- 1.60.50 Integration of solar and wind into fuel processing
- 1.60.60 Utilisation of CO2

2 Processing

2.10 Solid fuel beneficiation

2.10.10 Dewatering and drying
2.10.20 New beneficiation methods

2.20 Pyrolysis

2.20.10 Fundamentals of pyrolysis
2.20.20 Pyrolysis technology development
2.20.30 Low-temperature treatment (including torrefaction)
2.20.40 Properties of pyrolysis gases and liquids
2.20.50 Upgrade of pyrolysis gases and liquids
2.20.60 Properties, upgrade and use of char, including biochar

2.30 Liquefaction (X-to-L)

2.30.10 Direct liquefaction
2.30.20 Fischer-Tropsch synthesis
2.30.30 Other X-to-L processes

2.40 Gasification

2.40.10 Gasification of char
2.40.20 Reaction of volatiles (tar)
2.40.30 Gas cleaning
2.40.40 Catalysis and behaviur of inorganics during gasification
2.40.50 Hydrogen production
2.40.60 Gasification technology development
2.40.70 Sorption enhanced gasification

2.50 Combustion

2.50.10 Combustion of solid fuels
2.50.20 Combustion of liquid fuels
2.50.30 Combustion of gaseous fuels
2.50.40 CO_2 capture and storage
2.50.50 Ash behaviour (slagging, fouling, agglomeration)

2.60 Biofuels, biochemicals and biorefinery

2.60.10 Biodiesel production
2.60.20 Bioethanol
2.60.30 Bio-oil
2.60.40 Advanced biofuels
2.60.50 Biochemicals
2.60.60 Biorefinery

2.70 Liquid fuel upgrading and beneficiation

2.70.10 Desulphurisation
2.70.20 Denitrogenation
2.70.30 Oxygenation and deoxygenation
2.70.40 Cracking and hydrotreatment
2.70.50 Other upgrading and beneficiation

2.80 Other fuel processing technologies

- 2.80.10 Fuel cells (excluding material science and engineering)
- 2.80.20 Energy storage (chemical)
- 2.80.30 Environmental aspects of fuel processing
- 2.80.40 CO2 utilisation
- 2.80.50 Production of hydrogen from water electrolysis
- 2.80.60 Synthesis of non-carbon-containing fuels (such as NH3)

2.90 Fuel processing reactor types

- 2.90.10 Fixed bed reactor
- 2.90.20 Fluidised bed reactor
- 2.90.30 Entrained flow reactor
- 2.90.40 Slurry reactor
- 2.90.50 Other reactor

2.100 Techno-economic and environmental assessment of fuel processing technologies

- 2.100.10 Techno-economic assessment of fuel processing technologies
- 2.100.20 Reduction of wastes from fuel processing processes

3 Fuel properties

3.10 Fuel Properties (solid, liquid, gaseous)

- 3.10.10 Thermodynamic and transport properties
- 3.10.20 Kinetic properties
- 3.10.30 Environmental parameters
- 3.10.40 Fit-for-purpose properties and metrology