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List of Abbreviations

| | |
|--------|---|
| Å | Angstrom |
| eV | Electron volt |
| FT-IR | Fourier transform infrared |
| GC | Gas Chromatography |
| GC-MS | Gas chromatography-mass spectrometry |
| NMR | Nuclear magnetic resonance |
| IEA | International Energy Agency |
| JCPDS | Joint Committee on Powder Diffraction Standards |
| GLC | Glycerol carbonate |
| DMC | Dimethyl carbonate |
| EIA | Energy Information Administration |
| FAME | Fatty acid methyl ester |
| FFA | Free fatty acid |
| Kg | Kilogram |
| KJ/mol | Kilojoule per mole |
| kV | Kilovolt |
| M | Molar |
| mA | Milliampere |
| mg | Milligram |
| min | Minute |
| MJ | Megajoule |
| mmol/g | Millimole per gram |
| N | Stoichiometric factor |
| nm | Nanometer |

| | |
|---------------|-----------------------------------|
| pH | Potential of hydrogen |
| pKa | Acid dissociation constant |
| rpm | Revolution per minute |
| T | Temperature (K) |
| wt. % | Weight percent |
| X | Conversion |
| °C | Degree Celsius |
| K | Kelvin |
| Λ | Lambda |
| μm | Micrometer |
| θ | Theta |
| XRD | X-ray diffraction |
| SEM | Scanning electron microscopy |
| TGA | Thermogravimetric analysis |
| EDX | Energy dispersive X-ray analysis |
| XPS | X-ray photo electron spectroscopy |
| BET | Brunauer-Emmett-Teller |
| BJH | Barrett-Joyner-Halenda |