

# KUROKAWA LAB.

## Developing Non-ferrous Metal Production Processes



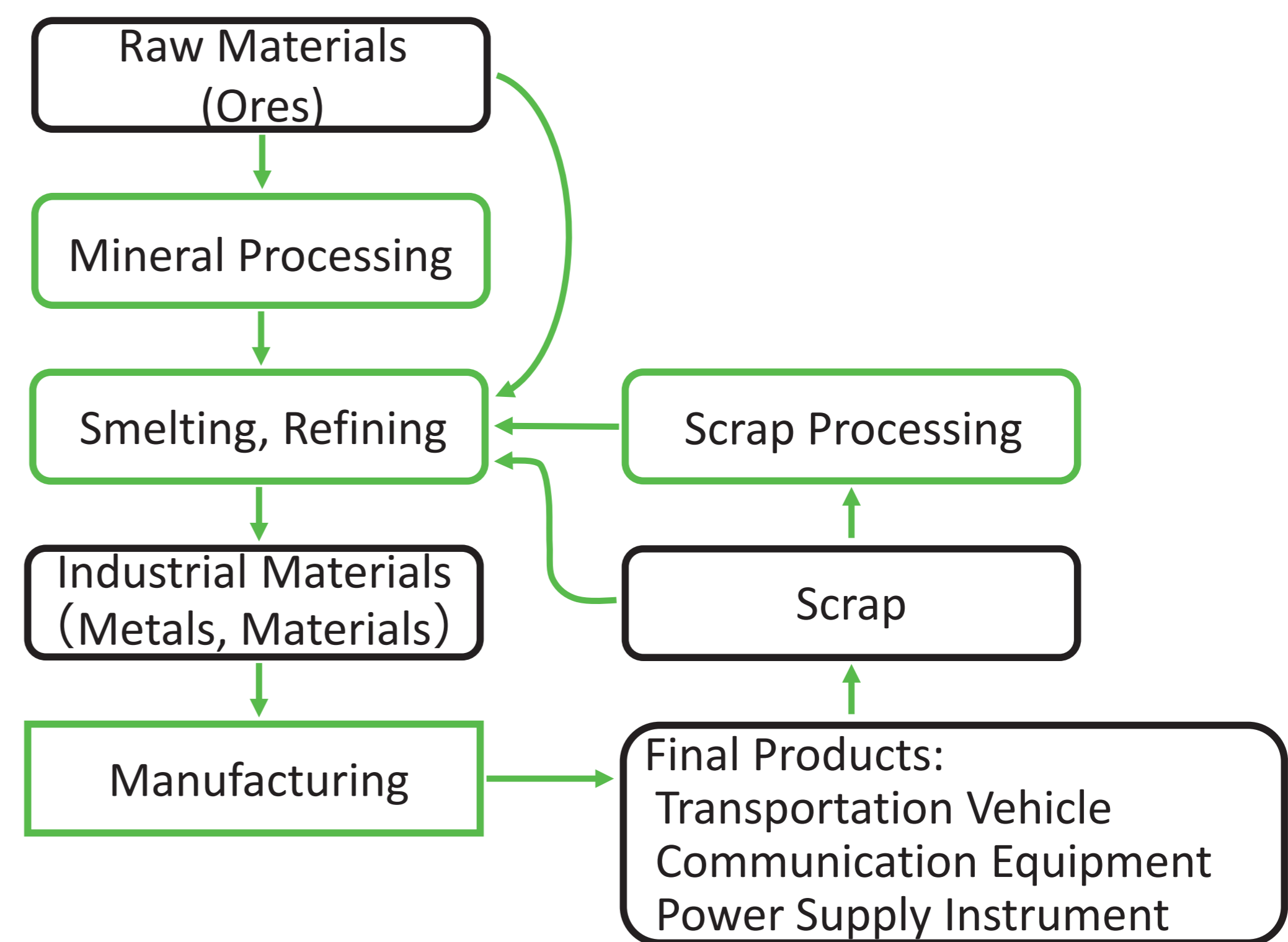
Endowed Research Unit for Non-ferrous Metal Resource Recovery Engineering (JX Metals Endowed Unit)

Process Engineering of Non-ferrous Metals

<https://kurokawa.iis.u-tokyo.ac.jp/>

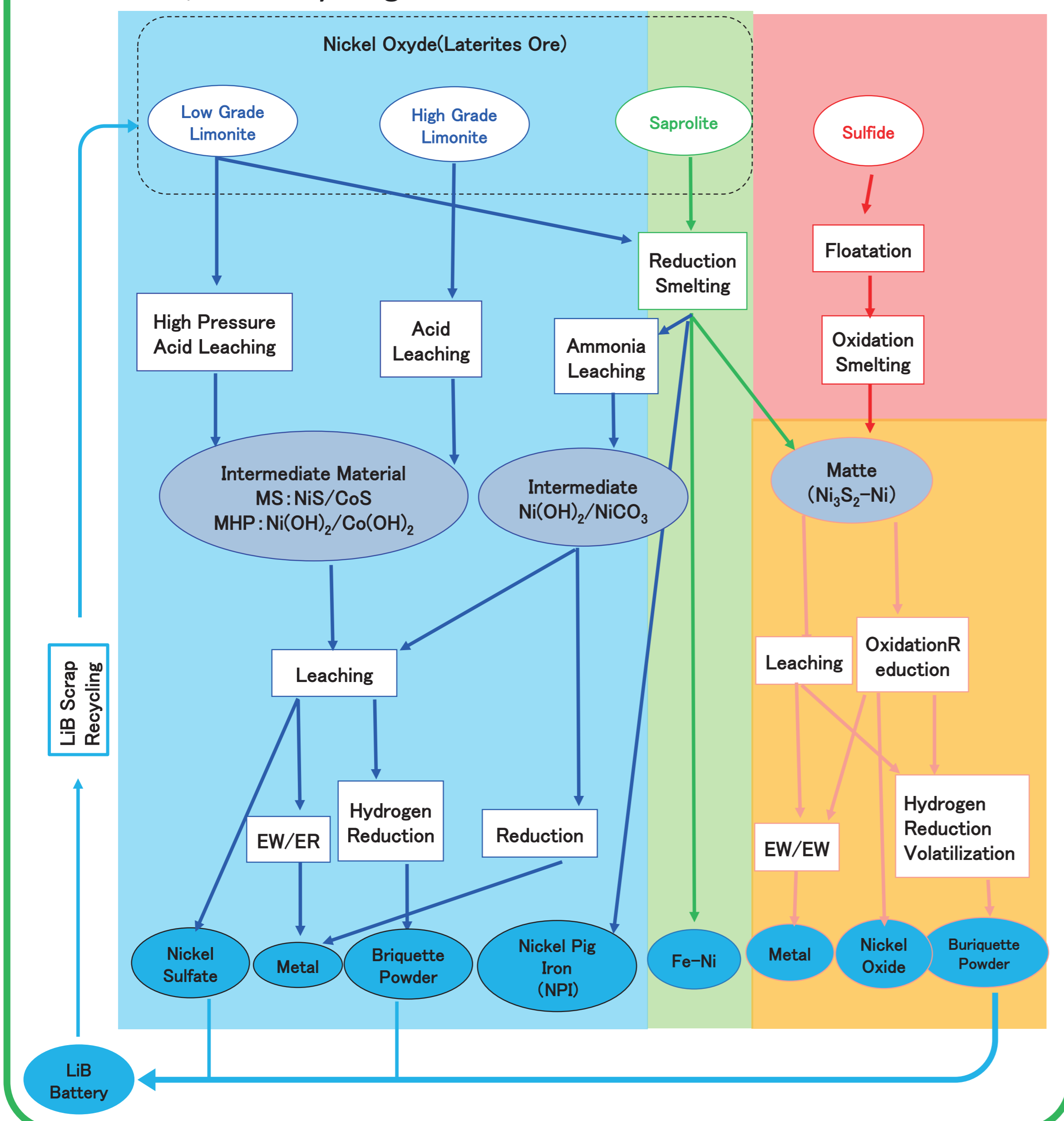
### New Process for Sustainable Society and Human Resource Development

In addition to the base metals such as copper, lead, and zinc, various metals such as rare metals, rare earth metals, and precious metals are indispensable for the development of modern society, and getting more and more important in the future. However, the high grade natural ore deposits are depleting, and therefore, it is becoming crucial to improve and/or develop smelting and recycling processes for the low-grade ore and secondary resources that have not been economically rational to be used. By minimizing energy consumption of the processes and maximizing recovery ratio of target metals to reduce the amount of waste generation, the energy-efficient, environmentally-sound, and low-cost process scheme need to be implemented.



#### Nickel Smelting & Refining

In the big trend of electrification of automobiles, the market for lithium-ion rechargeable batteries with nickel-based positive electrodes is growing significantly. We optimize processes for smelting and refining nickel ore, producing the positive electrode materials, and recycling of wasted batteries.



#### Gold Pyro & Hydro Process

Gold production is a combination of various unit processes, and we optimize the processes including recycling.

