

Stabilized Alkali Metal Powders: For Improved Chemical Processing Efficiency



SiGNa Chemistry has developed and commercially scaled a breakthrough “green” technology for cost-effectively stabilizing alkali metals in nano-structured silicas and aluminas (M-SG and M-AG) that effectively eliminate the dangers and barriers to use of neat alkali metals.

Throughout the manufacturing process, all raw materials are completely integrated with no waste stream; even the N_2 gas is recycled. Scale of manufacturing has been achieved at > 1 metric ton per batch.

Stage 0

(K_2Na , Na_2K , etc.)

Desulfurization

pyrophoric powders able to reduce Teflon in the solid-state.

Stage I

Liquid alloys and
Na, K, Cs, Rb, etc.

Industrial Chemistry, Pharmaceuticals, & Environmental Remediation

non-pyrophoric, dry air stable powders with the reactivity equivalent to neat alkali metals; usable in a multi-purpose equipment under ambient temperatures and pressures in non-ammonia solvents (Figures 1 and 2).

Stage II

Alloys and Na

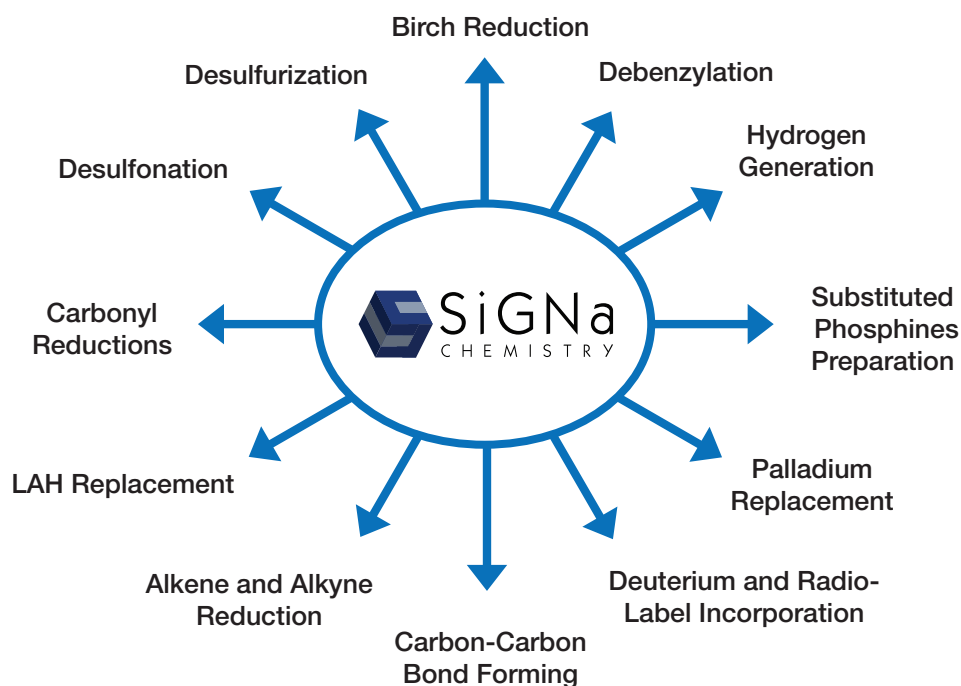
Hydrogen Production and Hydrogenation Chemistry

nanocrystalline NaSi that reacts with water to produce high-pressure H_2 .



Stage I Na-SG being poured
through ordinary laboratory air

Applications of SiGNa Materials (M-SG)



Winner of the
2008 Presidential
Green Chemistry
Challenge Award