

phase different Cu-based bi-metal nanoporous electrocatalyst for CO₂ reduction

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Carbon dioxide reduction is promising technology for clean energy and decreasing greenhouse effect. Various study is on-going with different metal and structure. Pure metal cannot free from scaling relationship. Bi-metal structure can break scaling relationship by making additional bonding. And binding energy between bi-metal and reactant can be controlled by composition and phase. Recent bi-metal researches are almost using nanoparticle structure. Therefore, binder makes dead spaces and surfactant/support effect is occurred. Free-standing structure is needed. Among them, nanoporous structures is best for catalyst. It can enhance surface area extremely, cause local pH and have high active site. Current bi-metal nanoporous catalyst focused on metal composition. Phase of metal can be reaction control factor. Different phase means crystal structure is changed. Various crystal structure makes surface geometry difference. Same composition of metal has different density of state with phase. It means d-band center is changed. We can expect binding energy of reactant is also differ from phase. Our research focus on different phase of bi-metal nanoporous catalyst for CO₂ reduction.