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Nota di contenuto	The Fabrication of Nanoporous Metals (Au, Cu, Pd) and Their Application in Heterogeneous Molecular Transformations -- Nanoporous Copper Metal Catalyst in Click Chemistry: Nanoporosity Dependent Activity without Supports and Bases -- Nanoporous Gold Catalyst for Highly Selective Semihydrogenation of Alkynes: Remarkable Effect of Amine Additives -- Unsupported Nanoporous Gold Catalyst for Highly Selective Hydrogenation of Quinolines.
Sommario/riassunto	In this thesis, the focus is on the study of new catalytic properties of unsupported nanoporous metals in heterogeneous organic reactions under liquid-phase conditions. The author was the first to fabricate nanoporous copper with tunable nanoporosity and apply it for organic reactions. The catalyst can be reused up to ten times without loss of catalytic activity. In addition, the author developed the highly selective semihydrogenation of alkynes using nanoporous gold as a catalyst for the first time, affording Z-alkenes in 100% selectivity, which cannot be realized by traditional catalysts. All of the results described here will help readers to develop new catalytic performance of nanoporous metals for organic reactions.