

## Dealloyed nanoporous metals for green application

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Nanoporous metal (NPM) produced by dealloying is an emergent multifunctional material. The simple dealloying technique produces a self-organized and self-supporting three-dimensional nano-architecture offering a variety of attractive applications. NPM is now a new form of 'Gold rush'. In this presentation, some examples will be introduced for green application.

First, we characterized the microstructure of nanoporous gold using spherical-aberration-corrected transmission electron microscopy (Cs-corrected TEM). The arrangement of near-surface atoms was also measured accurately by Cs-corrected high-resolution TEM (HRTEM), which provides phase-contrast images with high displacement sensitivity. In addition to the static observation in inert vacuum environment, we also characterized the surface atomic structure evolution during CO oxidation in a reactive atmosphere using a newly dedicated environmental HRTEM [1-3].

Second, we attempted to produce advanced hierarchical electrodes suitable for mass production.

Keywords: nanoporous metal; catalysis; supercapacitor; dealloy

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