

Fabrication of Porous Nickel Thin Film

Technology Overview

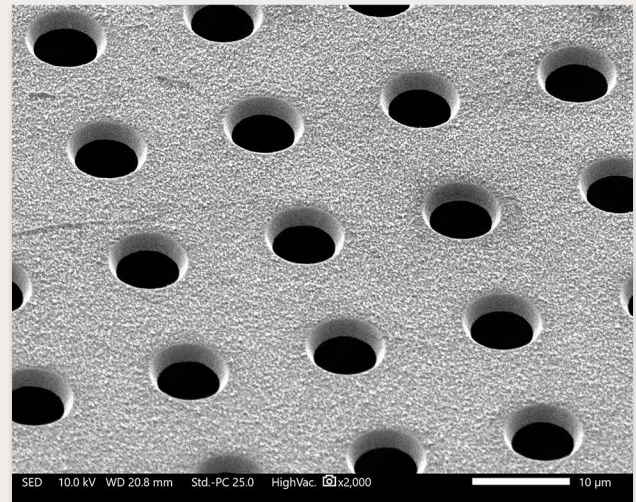
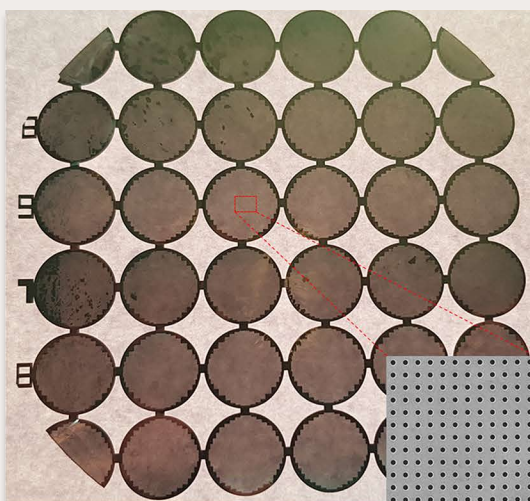
A microfabrication process to produce nickel thin film which contains fine through-hole features has been developed. This process is cost-effective as it uses technologies and materials which are commonly used in semiconductor industries. Nickel thin film has advantages over products made by other commonly used materials such as silicon or polymers in aspects of mechanical strength, durability and reproducibility of experimental results.

Features & Specifications

The fabrication process consists of three major steps.

- Firstly, photoresist structures are created on metal-coated substrate through optimized photolithography.
- Secondly, nickel is deposited on the substrate using electroplating techniques with the photoresist structures as mould to form the thin film with through-hole features which are less than 10µm in diameter.
- Lastly, the formed porous film is detached from the substrate through selective etching.

The thin films produced using our process have typical thickness of 10µm while the diameters of the through holes can be as small as 5µm.



Customer Benefits

The developed process can enable the customer to produce a high-quality membrane product with reduced costs.

Potential Applications

World demand for membranes is forecast to rise 8.5 percent annually to \$26.3 billion in 2019, from which the metal membrane (thin film) constitutes a substantial portion of the total market demand.

The products made from this developed process can be used for purification, particle trapping, sensing and other purposes. It is the key component in devices of many different industries such as medical diagnosis, chemical engineering, environmental monitoring and food safety control.