



The low losses of all-dielectric systems enable high-performance optical filters, windows and mirrors. Rather than building traditional dielectric filters from many layers of exotic materials with unusual dielectric properties, MRSEC researchers are developing new nanostructured filters whose optical performance arises from just one or two layers of simple, cheap materials. For example, this polarization-insensitive mid-infrared stop-band filter is patterned into a single layer of amorphous silicon deposited on an ultra-thin free-standing polyimide film. These easy-to-fabricate filters with customizable polarization and angular sensitivity could enable a new generation of cheap, high-quality optical devices.