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Transparent Aluminum Oxide Films by Edge Anodization[1] JONATHAN STOTT, THOMAS GREENWOOD, DAVID WINN, Fairfield University — In this paper we present our recent work on manufacturing thin (3 – 5 μm) films of porous aluminum(III) oxide [PAO] using a novel edge-anodization technique. With this modified anodization process, we are able to create transparent PAO films on top of insulating substrates such as glass or plastic. By controlling the processing parameters, the index of refraction of PAO films can be engineered to match the substrate, which gives us a durable reflection-free and scratch-resistant coating over conventional optics or LCD displays. Eventually we hope to create ordered porous aluminum oxide cladding around an optical fiber core, which could have a number of interesting optical properties if the pore spacing can be matched to the wavelength of light in the fiber.

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