Plasma propagation in a microplasma channel having the form of a spiral has been studied in the rare gases and gas mixtures. Microchannels having widths of 200-300 µm, and a length-to-width aspect ratio of ~10^3:1, have been fabricated in nanoporous Al₂O₃ by a sequence of wet chemical and micropowder machining processes. Produced from 125-250 µm thick aluminum foil, these channels are situated in a dielectric barrier structure having Al electrodes straddling the Al₂O₃ channel. For the experiments reported here, the channels are formed (by photolithographic patterning) into a spiral having an overall diameter of 3 cm. Spatially and temporally-resolved emission intensity maps, obtained with a gated, intensified camera and a telescope, reveal plasma propagating radially outward from the center of the spiral. Propagation speed varies with the gas (or gas mixture) and pressure. The characteristics of plasma propagation at a pressure of 1 atm and the observation of standing waves with azimuthal symmetry will be discussed.

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