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Shock Wave Propagation in Small Scale Circular Channels KAZUYA TAJIRI, EZEQUIEL MDICI, Michigan Technological University — Shock wave propagation through circular channel with inner diameter in the order of 1 and 2 mm at different wall temperature is studied using two fast-response pressure transducers. The shock wave is generated by a modified Split-Hopkinson Pressure Bar shock tube and introduced into the channel. The shock wave propagation speed near the inlet of the channel is about $M \sim 1.2$, and quickly decelerates inside the channel. Pressure profile measured in the channel indicated the sharp increase followed by gradual decrease with fluctuations and several small peaks. Values of peak pressure increase with channel wall temperature, but the inlet shock wave propagation speed has no significant impact. On the other hand, the intervals between peak pressures decrease with increased shock tube pressure while the wall temperature has marginal impact. The inner diameter of the channel also affects the wave propagation speed due to the difference in dissipation.

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