As the scale of devices becomes small, thermal control and heat dissipation from these devices can be effectively accomplished through the implementation of microchannel passages. The small passages provide a high surface area to volume ratio that enables higher heat transfer rates. High performance microchannel heat exchangers are also attractive in applications where space and/or weight constraints dictate the size of a heat exchanger or where performance enhancement is desired. This survey article provides a historical perspective of the progress made in understanding the underlying mechanisms in single-phase liquid flow and two-phase flow boiling processes and their use in high heat flux removal applications. Future research directions for (i) further enhancing the single-phase heat transfer performance and (ii) enabling practical implementation of flow boiling in microchannel heat exchangers are outlined.
Your Session has timed out. Please sign back in to continue.