Thin films of ZnS and Cu2SnS3 have been produced by pulsed laser deposition (PLD), the latter for the first time. The effect of fluence and deposition temperature on the structure and the transmission spectrum as well as the deposition rate has been investigated, as has the stoichiometry of the films transferred from target to substrate. Elemental analysis by energy dispersive X-ray spectroscopy indicates lower Sn and S content in Cu2SnS3 films produced at higher fluence, whereas this trend is not seen in ZnS. The deposition rate of the compound materials measured in atoms per pulse is considerably larger than that of the individual metals, Zn, Cu, and Sn.