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CSP-II: Near-infrared Spectroscopy of Stripped-Envelope Supernovae MELISSA SHAHBANDEH, ERIC HSIAO, Florida State University, CHRIS ASHALL, University of Hawaii, CSP COLLABORATION — We present 76 NIR spectra of 35 stripped-envelope supernovae obtained by the Carnegie Supernova Project-II, encompassing optical spectroscopic Types IIb, Ib, Ic, and Ic-BL. The spectra range in phase from pre-maximum to 80 days past maximum. This unique data set constitutes the largest NIR spectroscopic sample of SESNe to date. NIR spectroscopy provides observables with additional information compared to observations in the optical. The NIR contains the resonance lines of He I and allows a more detailed look at whether Type Ic supernovae are completely stripped of their outer He layer. The NIR spectra of SESNe have many similarities, but closer examination through statistical means reveals a strong dichotomy between NIR He-rich and He-poor SNe. These NIR subgroups correspond to the optical IIb/Ib and Ic/Ic-BL types, respectively. The largest difference between the two groups is observed in the 2 μm region, near the He I λ2.0581 μm line. The division between the two is not an arbitrary one along a continuous sequence. Early spectra of He-rich SNe show stronger He I λ2.0581 μm absorption compared to the He-poor SNe, but with a wide range of profile shapes. This line also provides evidence for trace amounts of He in half of our He-poor SNe.

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