

Abstract Submitted
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CSP-II SE-SNe spectroscopy in the NIR MELISSA SHAHBANDEH, PhD Candidate at Florida State University, ERIC HSIAO, Assistant Professor at Florida State University, PETER HOEFLICH, Professor at Florida State University, CHRIS ASHALL, Post-Doctoral fellow at Florida State University — I will present a sample of 109 near-infrared (NIR) spectra of 40 Stripped Envelope Core Collapse Supernovae (SESNe), obtained by the Carnegie Supernova Project II (CSP-II). This diverse dataset constitutes the largest NIR sample of SESNe. NIR spectroscopy provides a unique probe for SN physics with several advantages over observations in the optical. Specifically, the H I and C I lines are stronger and more isolated in the NIR. This advantage combined with our large sample allows us to investigate long-standing issues. For example, are SNe Ic truly stripped of their helium or are their helium shells not being sufficiently excited by gamma-rays? We found that all subclasses show a strong profile at 1.05 micron. By using different constraints including velocity and line strength of this feature for selected SNe within the sample, we show that the 1.05 micron feature is most probably carbon in Type Ic SNe. This result indicates that in SNe Ic there is no significant amount of helium shell present. We also detect CO in 8 SNe within the sample, which appears as early as 50 days. CO is an effective cooler and can help us understand the dust production in SESNe.

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