

Abstract Submitted
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Dispersion and non-linear optical properties of ultrastrongly coupled organic cavity polaritons MICHAEL CRESCIMANNO, Dept. of Physics and Astronomy, Youngstown State Univ, SAMUEL SCHWAB, KENNETH SINGER, Dept. of Physics, Case Western Reserve University — Planar microcavities filled with certain organic dyes result in vacuum Rabi splittings in the visible that are in excess of 1eV, indicating the resulting cavity polaritons are in the ultrastrongly coupled regime. A quantum optics-based theory model for the dye leads to quantitative comparison with recent Z-scan measurements of the dispersion and character of the non-linear optical response of this ultrastrongly coupled polaritonic matter. This comparison highlights the role the ultrastrongly coupled polaritonic states themselves play in the non-linear optical response, in contrast to that of a non-polaritonic loaded cavity. (Support via NSF DMR-1609077.)

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