We develop an asymptotic preserving scheme for nonlinear grey radiative transfer equation in diffusive regime. To mitigate the nonlinearity, our idea is based on a predictor-corrector reformulation of the equation, which is then discretized via an implicit-explicit method that preserves the asymptotic limit. The spatial discretization is fulfilled on a staggered grid after an even-odd decomposition. We also consider the application to Marshak wave where additional nonlinearity from the scattering coefficient needs special treatment. This is a joint work with Min Tang. (Received July 10, 2019)