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Infrared pseudogap in P- and Co-doped $BaFe_2As_2$ superconductors S.J. MOON, A.A. SCHAFGANS, Department of Physics, University of California, San Diego, S. KASAHARA, Research Center for Low Temperature and Materials Science, Kyoto University, T. SHIBAUCHI, Department of Physics, Kyoto University, T. TERASHIMA, Research Center for Low Temperature and Materials Science, Kyoto University, Y. MATSUDA, Department of Physics, Kyoto University, M.A. TANATAR, R. PROZOROV, A. THALER, P.C. CANFIELD, Ames Laboratory and Department of Physics and Astronomy, Iowa State University, A.S. SEFAT, D. MANDRUS, Materials Science and Technology Division, Oak Ridge National Laboratory, D.N. BASOV, Department of Physics, University of California, San Diego — We investigated the in-plane electronic response of P- and Co-doped $BaFe_2As_2$ compounds using infrared spectroscopy. We found hallmarks of the normal-state pseudogap in the optical spectra of the $BaFe_2As_2$ system, which are very similar with those of the cuprates. Based on the evolution of the electronic response with doping and across the superconducting transition, we suggest that the antiferromagnetic fluctuations can be a possible origin of the infrared pseudogap in the iron pnictides. We will also discuss implications of our results for the origin of the pseudogap in the cuprates.

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