Contribution ID: **172** Type: **Poster**

【170】Magnetic and superconducting properties of the iron arsenide pnictides Ba1-xNaxFe2As2 as seen by infrared spectroscopy

Wednesday 28 August 2019 19:24 (1 minute)

The iron pnictides high Tc superconductors exhibit a rich phase diagram that is known for the close proximity of the superconducting (SC) and antiferromagnetic (AF) or commensurate spin-density-wave (SDW) orders. In the hole-doped Ba1-xNaxFe2As2 (BNFA) SDW develops a long-range order that competes with superconductivity and is accompanied by transitions between various structural and magnetic orders (like orthorhombic AF (o-AF) and tetragonal AF (t-AF)).

In this study we present IR reflectivity data together with respective optical conductivity spectra on BNFA compound in the range of dopings where both o-AF and t-AF states live together with superconductivity. Fitting the real part of optical conductivity spectra allows us to describe quantitatively the relation between magnetism and superconductivity in the BNFA samples.

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Session Classification: Poster Session

Track Classification: Condensed Matter Physics (KOND)