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New structural phase transition in $Bi_2(Fe_{4-x}Mn_x)O_{10-x}$ complex oxides and it implications in the mullite family of materials[1] PATRICIA KALITA, ANDREW CORNELIUS, HiPSEC & Dept. of Physics and Astronomy, University of Nevada Las Vegas, Las Vegas, NV, USA, STANISLAV SINOGEIKIN, Geophysical Lab., Carnegie Institution of Washington, Washington, DC, USA, KRISTINA LIPINSKA, OLIVER HEMMERS, Harry Reid Center for Environmental Studies, University of Nevada Las Vegas, NV, USA, MICHAEL LUFASO, ZACHARY KANN, Dept. of Chemistry, University of North Florida, Jacksonville, FL, USA, HARTMUT SCHNEIDER, Inst. of Crystallography, University of Koeln, Koeln, Germany — Complex oxides with the mullite crystal structure belong to the most important phase in both traditional (porcelains and alumino silicate refractories) and advanced ceramics (heat exchangers, shock resistant composites, optical devices). New complex oxides in the mullite family $Bi_2(Fe_{4-x}Mn_x)O_{10-x}$ were synthesized and characterized. Using synchrotron x-ray diffraction we demonstrate a new structural phase transition in $Bi_2(Fe_{4-x}Mn_x)O_{10-x}$ induced by pressure. We contrast it with the structural stability for mullite senso stricto $Al_{4+2x}Si_{2-2x}O_{10-x}$ where we did not observe any phase transition.

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