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SUPERCONDUCTIVITY IN '122' IRON PNICTIDES

Superconductivity at high temperature has been discovered in iron-pnictide compounds and this has ignited numerous interest and research on the properties of these compounds. Iron Pnictides in past studies have exhibited superconductivity up to high temperatures of 26K. Eu□Fe□_2 □As□_2 is one of the 122 iron pnictide compounds with a body centered tetragonal crystal structure and has also been seen to exhibit superconductivity on application of pressure of around 2.5Gpa. Superconductivity in these compounds can be achieved through doping or application of pressure on the material. Application of pressure on similar Pnictides such as Barium iron arsenide and Calcium iron arsenide has been seen to tune superconductivity. Superconductivity in materials has various application areas such as in the design of MRI machines and design of cables. Studies on these family of Iron compounds is therefore of great importance.In the recent past and currently, there has been growing interest in the science community on the study of the superconductivity phenomena due to its various advantages and projected future uses in industrial design of various machines. The use of Helium in essential hospital machines such as MRI has proved to be expensive and therefore many patients are unable to access this important health technology. Currently there are a lot of energy loses experienced as a result of using conductors that present some resistance to energy flow, energy losses lead to increased energy costs. Energy use is projected to rise by 56% by the year 2040.(Conti et al., 2016) There is need therefore to develop materials with superconducting properties to eradicate energy losses and improve the standards of living by lowering energy costs. Eu□Fe□_2 □As□_2 is a material that can be of important use in industry due to possession of superconducting properties(Igawa et al., 2009; Miclea et al., 2009; Stewart, 2011)

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