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Neutron tunneling in nanostructured systems: isotopical effect

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The thin films technology has become more and more attractive for researchers. The interest is based on their potential applications in laser materials, solar cells etc. Thin films can be prepared by various method such as spray pyrolysis, pulsed laser etc. Enriched isotopes thin films of nickel will be deposited on silicon substrate as sandwich multilayers by using vacuum physical vapor deposition system equipped with electron beam. Thereafter, these isotopic nickel thin films are intended for use as Fabry-Perot resonators to observe the tunneling phenomenon of neutron wave-particles. If successful, this would be the proof of engineering novel neutron optics devices for neutron research reactor based completely on isotope nanostructures. The multilayered isotopically enriched nickel thin films will be characterized using XRD, AFM, X-ray reflectometry and grazing incidence neutron reflectometry
Keywords: Isotope, Neutron tunneling, X-ray reflectometry, Fabry-Perot resonator

Primary authors: Mr MATIWANE, Aphiwe (iThemba LABS); Prof. MAAZA, Malik (iThemba LABS)

Presenter: Mr MATIWANE, Aphiwe (iThemba LABS)

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