

## VALUE ENHANCEMENT OF SRI LANKAN FERRUGINOUS LATERITES AND ITS APPLICATIONS IN NANOTECHNOLOGY

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Ferruginous laterites, a mottled vesicular rock, which is formed as a result of chemical weathering. It is rich in Fe while Al and Si occur as other constituents, in their hydroxide, oxy-hydroxide or oxide forms. This rock is abundant in some parts of Sri Lanka and considered as a valuable material that used in limited instances such as making bricks. In this study, as a value addition, ferruginous laterites have been used for the preparation of various metal oxides (Fe, Al and Si), and their nanoparticles and corresponding metals, in a facile, economical way. The laterites were first powdered, and acid leached to get leachable ions such as Fe<sup>3+</sup> and Al<sup>3+</sup> into aqueous form. Then iron part is precipitated first by hydrolyzing the solution at around pH 14. Then the Al is recovered by acidifying the resulting supernatant. These recovered metal compounds are then used for the production of nanoparticles of hematite, magnetite, alumina and aluminum. The product may be used in various nano-technological applications like waste water purification such as heavy metal, dye adsorption, anti-microbial studies, drug delivery, fire retardants, intumescent materials...etc. Hence, for countries like Sri Lanka lacking in bauxitic materials and rich in lateritic materials, it is important to utilize this material in an economical way for the production of value added materials from laterites.

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