DOI: https://doi.org/10.36094/sc.v89.2025.Waste_to_Wealth_Rice_Husk_to_Silicon.Nag.20

ARTICLE

*Sci. and Cult.* 91 (1–2) : 20-24 (2025)

# WASTE TO WEALTH – RICE HUSK TO SILICON NITRIDE-BASED RADOME MATERIALS

ABANTI NAG,[1,*] GAYATHRI ACHUTARAO,[1] SHIV NARAYAN[2]

*The prime goal of the 21st century is social, economic and environmental sustainability. Sustainability can be achieved only by renewable resource management. The use of the waste resource of rice husk to generate an engineered material of silicon nitride for aerospace applications is a stepping stone toward renewable resource management. This paper described the transformation of rice husk to amorphous silica followed by silicon nitride through carbothermal reduction nitridation. The formation of silica and silicon nitride was confirmed through powder X-ray diffraction analyses and infrared spectroscopy. The electromagnetic measurements confirmed the radar transmission properties of silicon nitride indicating the suitability of fabricated rice husk-converted silicon nitride as high-temperature ceramic radome material.*

***Keywords:*** *Rise husk, silicon nitride, sustainability, aerospace materials, dielectric permittivity, electromagnetic window, radar*