

Nanotechnology Laboratory at Shoolini University

RC Oswal Himalayan Institute of Nanotechnology, Himachal Pradesh

Vardhman's ₹3 crore CSR investment in 2021 established a state-of-the-art Nanotechnology Laboratory at Shoolini University, Himachal Pradesh. Equipped with three premier instruments — Field Emission Scanning Electron Microscope (FE-SEM), Atomic Force Microscope (AFM), and Anton Paar Litesizer 500 — the facility has catalysed breakthrough research, accelerated academic excellence, and positioned the region as an emerging hub for nanoscale innovation. Over three years, it has supported 23 PhD completions, 60 peer-reviewed publications, and 40 patent filings, while generating ₹105 lakh in total financial value.

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KEY PERFORMANCE INDICATORS

<div>₹3 Cr</div> <div>CSR Investment (2021)</div>	<div>2,520</div> <div>Total Sample Runs</div>	<div>60</div> <div>Peer-Reviewed Publications</div>	<div>40</div> <div>Patents Filed</div>	<div>23</div> <div>PhD Scholars Completed</div>
<div>₹44.4L</div> <div>Direct Financial Value</div>	<div>36</div> <div>Person-Years Saved</div>	<div>12</div> <div>Active Industry Partners</div>	<div>200+</div> <div>Students Trained</div>	<div>35%</div> <div>Return on Investment</div>

UN SDG ALIGNMENT

<div>SDG 4</div> <div>Quality Education</div>	<div>SDG 9</div> <div>Industry & Infrastructure</div>	<div>SDG 8</div> <div>Decent Work & Growth</div>	<div>SDG 12</div> <div>Responsible Consumption</div>
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KEY TAKEAWAYS & STRATEGIC INSIGHTS

Research Transformation

The lab eliminated dependency on external testing, cutting sample turnaround from 1-2 days to ~30 minutes. Annual publications rose 5× (from <10 to 50-60), enabled by direct access to FE-SEM, AFM, and Litesizer 500 instruments.

Academic & IP Output

Over three years: 23 PhD completions, 40 funded research projects, and 140 patent filings (8 granted), spanning materials science, biomedical applications, energy storage, and polymer innovations.

Financial Returns

The ₹3 Cr investment generated ₹105 lakh in total financial value (₹61L cost savings + ₹44L external revenue), a 35% ROI. Full operational self-sufficiency is projected within 5 years.

Industry & Community Linkage

Collaborations with V-Guard, Livguard, and Cosmo Ferrites reflect strong academia-industry integration. 24% of FE-SEM runs came from external industrial clients, establishing a regional MSME innovation hub.

Environmental & Social Value

On-site testing avoids inter-city transport, saving 2-3 tCO₂e annually. 200+ students received hands-on instrumentation training, building a skilled talent pipeline for India's nanotechnology sector.

Strategic Recommendations

Priorities include expanding AFM utilisation (101 runs vs. 864 for Litesizer), launching bundled industry service packages, and establishing tiered certification courses co-branded by Vardhman–Shoolini.