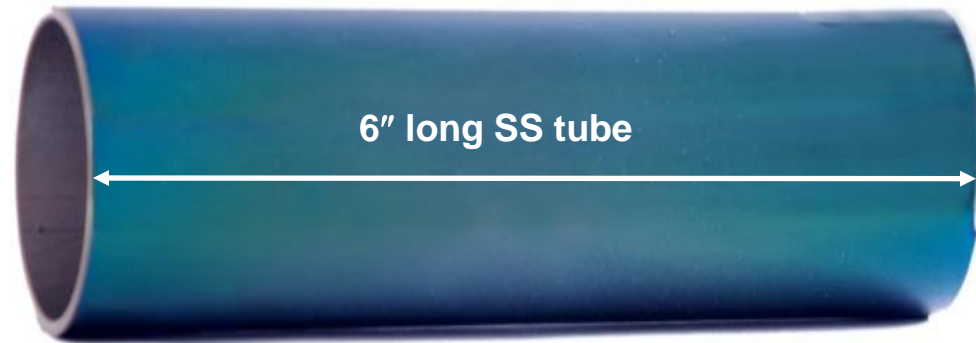


High Temperature Solar Selective Coating (HTSSC) for Solar Thermal Power Generation

CSIR-NAL has developed a high temperature solar selective coating using a laboratory scale sputtering process, which shows promising optical properties and thermal stability at high temperatures

Salient Features of CSIR-NAL HTSSC

- Uses nitrides, oxynitrides and oxides of transition metals
- High absorptance ($\alpha = 0.930$) on stainless steel substrates
- Low emittance ($\varepsilon = 0.09-0.10$) on stainless steel substrates
- High thermal stability in vacuum (up to 450°C for 1000 hrs)
- High thermal stability in air (up to 400°C for 1000 hrs)
- Coating design based on gradient refractive indices
- Nanometric scale tandem absorber
- Environmentally friendly process
- Stable under UV irradiation
- Qualified salt spray test (as per ASTM B117 standard)



Potential of the Coating Technology

- Ideal for parabolic trough receiver tubes
- Can also be used for industrial process heat applications

Present Level of the Technology

- Process available with CSIR-NAL to deposit high temperature solar selective coatings on 6" long stainless steel tubes

Upscaling of the Process

- Industrial participation required to upscale the laboratory scale process for establishing a facility to deposit HTSSC on 2 m long tubes