

Package ‘mnpPlasmonR’

May 9, 2026

Type Package

Title Optical Response of Metallic Nanoparticles (Drude + Rayleigh)

Version 0.1.0

Description Computes dielectric response and optical cross-sections of metallic nanoparticles using Drude dielectric model and Rayleigh approximation.

License GPL-3

Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-03-18 08:40:02 UTC

Contents

mnpPlasmonR 1

Index 3

mnpPlasmonR

MnpPlasmon R API

Description

Functions for Drude dielectric model and Rayleigh optical response of metallic nanoparticles.

Usage

```
material_list()
material_exists(material)
drude_epsilon(material, wavelength_nm)
rayleigh_polarizability(radius_nm, eps_particle, medium_refractive_index = 1.0)
sphere_response(wavelength_nm, radius_nm, material, medium_refractive_index = 1.0)
```

Arguments

`material` Material name, one of "Au", "Ag", "Al".
`wavelength_nm` Wavelength in nanometers.
`radius_nm` Sphere radius in nanometers.
`eps_particle` Complex dielectric value for particle.
`medium_refractive_index`
Refractive index of medium (default 1.0).

Value

`material_list()` returns character vector.
`material_exists()` returns logical.
`drude_epsilon()` and `rayleigh_polarizability()` return complex values.
`sphere_response()` returns named list with `sigma_ext`, `sigma_sca`, `sigma_abs`.

Examples

```
material_list()
material_exists("Au")

eps <- drude_epsilon("Au", 550)
resp <- sphere_response(550, 25, "Au", 1.0)
resp$sigma_ext
```

Index

`drude_epsilon (mnpPlasmonR)`, [1](#)
`material_exists (mnpPlasmonR)`, [1](#)
`material_list (mnpPlasmonR)`, [1](#)
`mnpPlasmonR`, [1](#)
`rayleigh_polarizability (mnpPlasmonR)`, [1](#)
`sphere_response (mnpPlasmonR)`, [1](#)