Package 'mnpPlasmonR'

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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

Author Galih Ridho Utomo [aut, cre]

Maintainer Galih Ridho Utomo <g4lihru@students.unnes.ac.id>

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Contents

`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