

# Computational light scattering (PAP315)

## Lecture 13

Karri Muinonen<sup>1,2</sup>

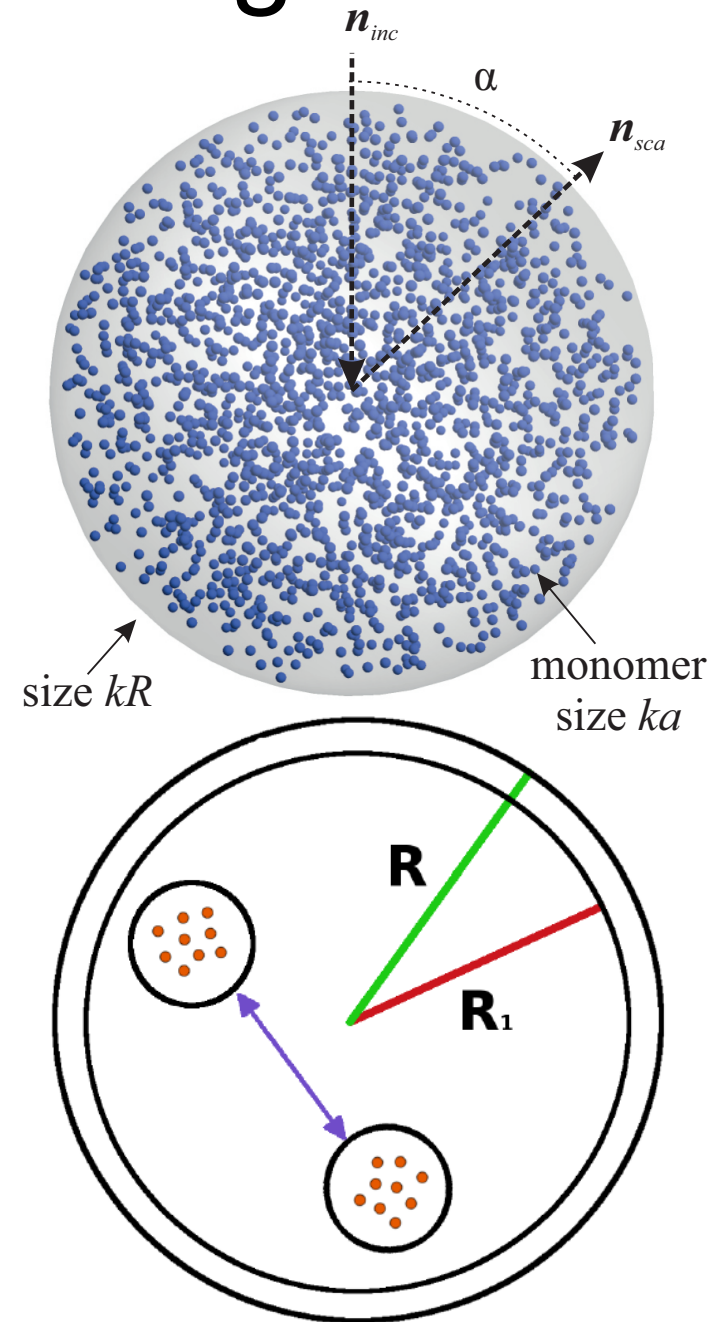
Professor of Astronomy

<sup>1</sup>Department of Physics, University of Helsinki, Finland

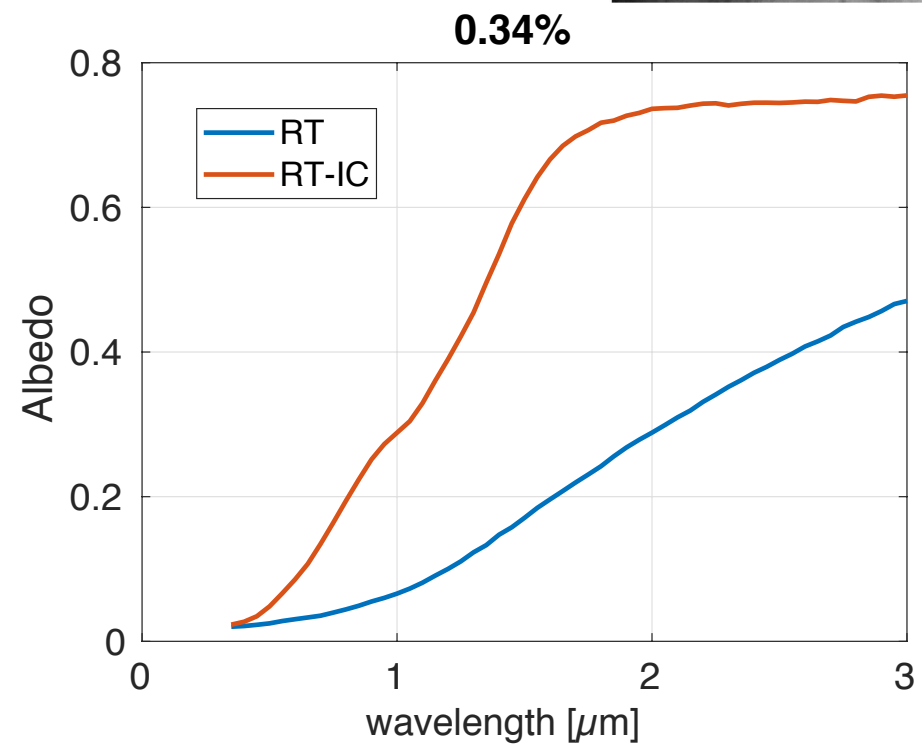
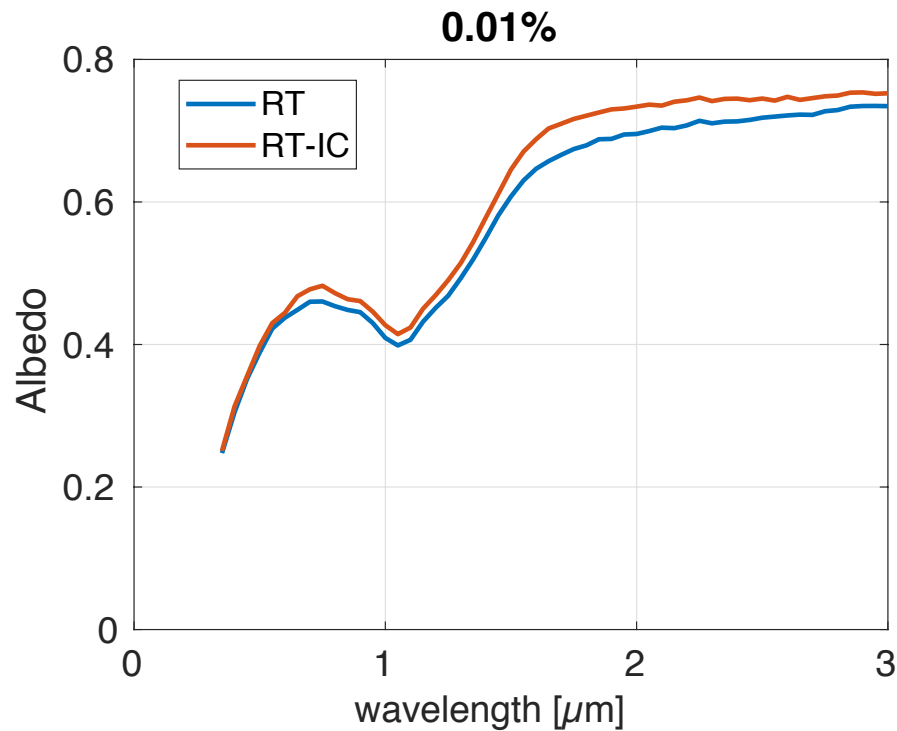
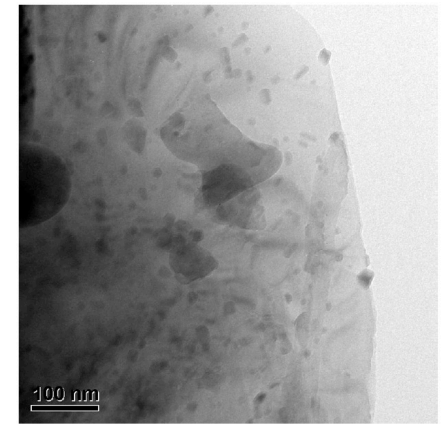
<sup>2</sup>Finnish Geospatial Research Institute (FGI), Masala, Finland

# Multiple scattering

- Radiative transfer and coherent backscattering (RT-CB; Muinonen et al., ApJ 2012; Muinonen, WRM 2004 and URSI EMTS 1989)
- Superposition T-Matrix Method (STMM or MSTM; Mackowski & Mishchenko, JQSRT 2011; FaSTMM, Markkanen & Yuffa JQSRT 2017)
- Electric Current Volume Integral Equation Method (JVIE; Markkanen & Yuffa, JQSRT 2017, Markkanen et al., IEEE-TAP 2012)
- Radiative transfer with reciprocal transactions ( $R^2T^2$ ; Muinonen et al., URSI EMTS 2016ab, RS 2017, OL 2018, JoVE 2019; Markkanen et al., OL 2018, ApJL 2018; Väisänen et al., PLoS ONE 2019)



# Space weathering



Muinonen et al. 2018, Lindqvist et al. 2018,  
Martikainen et al. 2018, Kohout et al. 2014

