Monday, March 20

8:45-9:00 **Opening of the conference**

9:00–10:30 **Tropospheric aerosols: the NASA perspective /** H. Maring

- **(Invited review)** S. P. Burton, J. Hair, R. Ferrare, C. Hostetler, M. Vaughan, and A. Omar, *Characterization of tropospheric aerosols with polarization lidar*
- G. L. Schuster, R. Espinosa, L. D. Ziemba, A. J. Beyersdorf, A. Rocha-Lima, B. E. Anderson, J. V. Martins, O. Dubovik, F. Ducos, D. Fuertes, T. Lapyonok, M. A. Shook, Y. Derimian, and R. H. Moore, *A Laboratory Experiment for the Statistical Evaluation of Aerosol Retrievals (STEAR)*
- J. V. Martins, R. Fernandez-Borda, B. McBride, W. R. Espinosa, and L. A. Remer, *Combination between in situ and remote-sensing measurements of tropospheric aerosols*
- F. Xu, D. J. Diner, M. Luo, D. Fu, and O. Dubovik, *Coupled retrieval of aerosol properties, column trace gas abundance, and surface reflectance using multiangle and multispectral polarimetric measurements*
- J. Wang, S. Ding, and X. Xu, *Polarimetric remote sensing in oxygen A and B bands: sensitivity study and information content analysis for vertical profile of aerosols*

10:30–11:00 **Coffee break**

11:00–12:00 **Tropospheric aerosols: the NASA perspective /** H. Maring

- R. C. Levy, R. A. Kahn, A. Sayer, O. Torres, N. C. Hsu, P. R. Colarco, and L. A. Remer, *Passive remote-sensed observations of tropospheric aerosols: a GSFC perspective*
- E. Kassianov, M. Pekour, C. Flynn, L. K. Berg, J. Beranek, A. Zelenyuk, C. Zhao, L. R. Leung, P. L. Ma, L. Riihimaki, J. D. Fast, J. Barnard, A. G. Hallar, I. B. McCubbin, E. W. Eloranta, A. McComiskey, and P. J. Rasch, *What can satellite observations, surface data and model simulations tell us about trans-Pacific dust transport?*
- G. Wind, A. Da Silva, K. Meyer, S. Platnick, R. Levy, P. Norris, and S. Mattoo, *Multi-sensor Cloud and Aerosol Retrieval Simulator and its applications*
- W. Hou, J. Wang, and X. Xu, *Feasibility analysis of hyperspectral remote sensing of aerosols from future geostationary satellites*

12:00–13:30 **Lunch**

13:30–14:30 **Memorial Borghese Session /** M. Mishchenko

- *Ferdinando Borghese: his life and scientific legacy*
- T. Väisänen, J. Markkanen, A. Penttilä, and K. Muinonen, *Radiative Transfer with Reciprocal Transactions R^2T^2*
- J. M. Dlugach, M. I. Mishchenko, and D. W. Mackowski, *Electromagnetic scattering by discrete media*
- L. Bi, W. Lin, and D. Mackowski, *Modeling the optical properties of complex mixed aerosol particles based on a new combinational T-matrix approach*

14:30–15:30 **Electromagnetic scattering /** J. A. Lock

- **(Invited review)** J. P. Reid, R. E. Willoughby, A. Valenzuela, B. R. Bzdek, H. Lin, and A. J. Orr-Ewing, *Light scattering and absorption studies with single trapped particles*
- S. Edalatpour and M. Francoeur, *Near-field radiation heat transfer between arbitrarily-shaped objects and a surface*
- A. Didari and M. P. Mengüç, *Spectrally selective thermal emission by structured mesoporous metamaterials*

15:30–16:00 **Coffee break**

16:00–17:30 **Electromagnetic scattering /** P. Yang

- G. Gouesbet and J. A. Lock, *A comment on the description of axisymmetric Bessel beams*

- J. Charon, J.-F. Cornet, J. Dauchet, and M. E. Hafi, *A first investigation on solving integral equations of electromagnetic scattering with the Monte Carlo method: application to arbitrarily shaped particles*
- Y. Grynko and J. Förstner, *Second harmonic emission from plasmonic gap nanoantennas with rough surfaces*
- A. V. Konoshonkin, N. V. Kustova, V. A. Shishko, D. N. Timofeev, and A. G. Borovoi, *Light scattering by irregular ice crystals of cirrus clouds*
- J. B. Maughan, A. Chakrabarti, and C. M. Sorensen, *Rayleigh scattering and the internal coupling parameter for arbitrary particle shapes*
- J. Seneviratne and M. J. Berg, *Electromagnetic scattering by spheroidal particles*

17:30–18:30 Meeting of the *JQSRT* Editorial Board

Tuesday, March 21

8:30–9:30 Multiple scattering / E. Kassianov

- **(Invited review)** D. Mackowski, *Application of DDA to plane parallel, discrete random media*
- M. I. Mishchenko, J. M. Dlugach, L. Liu, and D. W. Mackowski, *What makes a multi-particle group look like a turbid medium?*
- T. A. Reichardt and T. J. Kulp, *Radiative transfer model for the reflectance of packed particulate media*

9:30–10:30 Laboratory and field experiments / J. Eversole

- **(Invited review)** N. Thomas, A. Pommerol, Y. Brouet, O. Poch, B. Jost, and Z. Yoldi, *Laboratory studies of light scattering by well-controlled and characterized ice samples*
- Z. Gong, Y.-L. Pan, and C. Wang, *Optical trapping and manipulation configurations for measuring light extinctions of single particles*
- D. Landgraf, J. Zallie, R. Pinnick, Y.-L. Pan, and K. B. Aptowicz, Insights into particle morphology from single-particle light scattering

10:30–11:00 Coffee break

11:00–12:00 Laboratory and field experiments / J. Eversole

- P. Lane, M. Hart, and J. D. Eversole, A system for measuring forward light scattering by spherical and nonspherical silica particles
- H. Li, C. D. Rosebrock, T. Wriedt, and L. Mädler, *Experimental investigations on single burning droplets with micro-explosions using shadowgraphy, interferometric particle imaging, and standard rainbow refractometry*
- Y.-L. Pan, R. Fu, G. Videen, C. Wang, and J. L. Santarpia, *Simultaneous measurement of elastic back-scattering pattern and image from laser-trapped single airborne particles*
- A. Ronen and S. Elisha, *Performance of electro optical sensor in dusty environment: theory and experiment*

12:00–13:30 Lunch

13:30–15:30 Study of aerosol and environmental chemistry through analyses of light scattering / G. Videen & M. Berg

- S. C. Hill, D. C. Doughty, A. E. Wetmore, and D. James, *Raman spectra of individual atmospheric aerosol with spatial resolution of one to a few micrometers*
- M. J. Berg, Y. Heinson, O. Kemppinen, and S. Holler, *Light scattering and imaging of aerosol particles with digital holography*
- M. B. Hart, V. Sivaprakasam, J. Czege, and J. D. Eversole, *Using a linear electrodynamic trap and elastic scattering for single particle environmental fate studies*
- W. D. Herzog, J. M. Richardson, D. S. Wolinski, J. M. Jong, B. G. Saar, S. M. Redmond, and J. D. Eversole, *Micron-sized particle detection and discrimination using scattered infrared light*

- M. D. Alexandrov and M. I. Mishchenko, *Accuracy and information content of bistatic lidar observations of aerosols from space*
- R. Ceolato, N. Rivière, and M. J. Berg, *Spectral polarimetric light-scattering by soot aerosols: from single particles to complex fractal aggregates*
- J. M. Conny and D. L. Ortiz-Montalvo, *Effect of shape on optical properties of urban dust based on 3-dimensional reconstruction of individual particles*
- R. Furstenberg, C. A. Kendziora, V. Nguyen, and R. A. McGill, *Infrared microscopy of small particles on solid surfaces*

15:30–16:00 Coffee break

16:00–16:30 Study of aerosol and environmental chemistry through analyses of light scattering / G. Videen & M. Berg

- A. B. Milstein, J. M. Richardson, R. E. Martinez, J. J. Lacirignola, and R. G. Vanderbeek, *Polarization-dependent optical scatter from multi-particle aerosol samples*
- V. Sivaprakasam, M. B. Hart, and J. D. Eversole, *Enhanced Raman spectroscopy of aerosol particles*

16:30–17:30 Optical characterization / J. Dlugach

- **(Invited review)** C. M. Sorensen, *Light scattering by particles: the view from Q-space*
- D. Dannhauser, D. Rossi, M. Ripaldi, P. A. Netti, and F. Causa, *Differentiation of leukemia stages by scattering signatures of individual cells*
- C. A. Jeffery and B. Henderson, *Phenomenological theory of the reflectance of particulate media: scattering regimes and Lorentz features*

17:30–18:30 ELS Business Meeting

Wednesday, March 22

8:30–10:30 Electromagnetic scattering / K. Muinonen

- **(Invited review)** P. L. Marston, *Insight into scattering and caustics from the evolution of glare points and wavefronts*
- **(Invited review)** P. A. Martin, *Aspects of scattering in the time domain*
- J. A. Lock, *Electromagnetic scattering of a plane wave by a radially inhomogeneous sphere in the short wavelength limit*
- R. L. Panetta, S. Zhai, and P. Yang, *On the stopping time for time-domain exact simulations of single particle interactions with Gaussian optical pulse*
- M. P. L. Sentis, F. R. A. Onofri, and F. Lamadie, *In-line digital holographic near-field reconstruction applied to particles characterization in astigmatic optical systems and refractive index measurements*
- A. A. Shcherbakov, *Calculation of electromagnetic scattering by non-spherical particles by means of the generalized metric sources*

10:30–11:00 Coffee break

11:00–12:00 Astrophysical applications / V. Rosenbush

- O. Muñoz, F. Moreno, D. Guirado, J. Escobar-Cerezo, and J. W. Hovenier, *Scattering by mm-sized cosmic dust grains*
- N. N. Kiselev and D. V. Petrov, *Position and maximum of linear polarization of different asteroids types: Observations and computer simulation*
- L. Kolokolova, L. Nagdimunov, and C. Master, *Light scattering by hierarchical aggregates*
- E. Zubko, G. Videen, D. C. Hines, and Y. Shkuratov, *Positive polarization in comets: clues to the coma composition*

12:00–15:15 Poster session

- P. Barton and J. Pavlu, *Measurement of single object light scattering: experiment development and first results*
- T. Cheng, Y. Wu, X. Gu, and H. Chen, *Effects of mixing states on the multiple-scattering properties of soot aerosols*
- K. Du, K. Xue, and Z. Lee, *GPU accelerated 3D Monte Carlo ocean radiative transfer simulation*
- A. Egel, Yu. Eremin, Th. Wriedt, D. Theobald, and U. Lemmer, *The T-matrix method for light scattering by oblate particles near interfaces: improved accuracy through Sommerfeld integral truncation*
- Y. A. Eremin and T. Wriedt, *Unified formula for extinction cross-section for multipole of an arbitrary order*
- W. R. Espinosa, L. Remer, O. Dubovik, L. Ziemba, A. Beyersdorf, D. Orozco, A. Puthukkudy, G. Schuster, T. Lapyonok, D. Fuertes, and J. V. Martins, *Retrievals of aerosol optical and microphysical properties from imaging polar nephelometer scattering measurements*
- Z. R. Fathi, M. P. Mengüç, and H. Ertürk, *Optimization of iterative solvers for DDA-SI*
- T. Fauchez, S. Platnick, K. Meyer, C. Cornet, and F. Szczap, *Estimation of cirrus 1-km subpixel radiance variance in MODIS TIR channels using VIS reflectances at 250-m resolution*
- M. Gritsevich, S. Sonnett, J. Torppa, K. Muinonen, A. Penttilä, Amy Mainzer, T. Grav, J. Masiero, J. Bauer, and E. Kramer, *Shapes and rotational properties of selected Hilda and Trojan asteroids*
- O. Jobe, D. B. Thiessen, and P. L. Marston, *Hyperbolic umbilic caustics from oblate water drops with tilted illumination: observations*
- J. M. Jong, W. D. Herzog, J. M. Richardson, D. S. Wolinski, B. G. Saar, S. M. Redmond, and J. D. Eversole, *The Single Particle InfraRed Elastic Scatter (SPIRES) brassboard sensor*
- A. Kar, A. K. Sen, and R. Gupta, *Laboratory simulation of light scattering from regolith analogue: effect of porosity and particle size*
- F. K. Khosroshahi, H. Ertürk, and M. P. Mengüç, *Enhancement of spectral absorption of graphene based nano-structures in narrow bands*
- R. R. Li, G. Tang, J. Ding, and P. Yang, *Laboratory measurements of scattering phase function of dust samples at 532 and 1064 nm*
- W. Lin, L. Bi, D. Liu, and K. Zhang, *An efficient and accurate extinction simulator for atmospheric aerosols*
- C. Liu, J. Li, and Y. Yin, *How significantly can mixing enhance absorption of black-carbon aerosols*
- L. R. Llanza, P. G. Piedra, and H. Moosmüller, *Optical losses due to particles on solar cells: experimental scattering and absorption spectra for absorbing and non-absorbing mineral dust*
- B. A. McBride, J. V. Martins, R. Fernandez-Borda, *Hyper-angular polarimetric measurements of aerosols and clouds with the Hyper-Angular Rainbow Polarimeter (HARP)*
- G. Okyay, S. Bellayer, M. Jimenez, F. Samyn, and S. Bourbigot, *Radiative properties of in-flame sooty aggregates from fire scenarios of polymer burning*
- C. V. Pandya, U. Prajapati, and D. B. Vaidya, *Optical properties of core–mantle grains with ices as mantle*
- A. N. Pavlov, K. A. Shmirko, and E. Zubko, *Characterizing atmospheric aerosol: comparative analysis of active and passive techniques*
- A. Penttilä, G. Maconi, I. Kassamakov, M. Gritsevich, E. Hæggström, and K. Muinonen, *Experimental light scattering by small particles: first results with a novel Mueller matrix scatterometer*
- A. V. Romanov, A. I. Konokhova, K. V. Gilev, V. P. Maltsev, and M. A. Yurkin, *A spectral method to characterize single spheres from light-scattering patterns*
- S. Roy, N. Barua, G. A. Ahmed, and A. K. Buragohain, *Scattering properties of Mycobacterium smegmatis*
- S. Roy, N. Barua, G. A. Ahmed, and A. K. Buragohain, *Simulation of light scattering properties of Pseudomonas aeruginosa*
- T. V. Russkova, *GPU-based Monte Carlo simulation of radiative transfer in a cloudy atmosphere*

- S. Savenkov, S. Yoo, E. G. Caurel, Y. Oberemok, I. Kolomiets, T. Novikova, R. Ossikovski, and A. Klimov, *Linear polarization memory of inhomogeneous birefringent medium in visible wavelength range*
- A. A. Shcherbakov, *Rigorous simulation of electromagnetic scattering by rough surfaces*
- O. V. Shefer and T. V. Russkova, *Numerical study of the influence of different dispersed components of a crystal cloud on transmission of radiant energy*
- H. Shen, L. Wu, G. Liu, and W. Wang, *Capability and limitation on size and shape determination of a non-spherical particle by Interferometric Laser Imaging for Droplet Sizing technique using Fourier Transform*
- D. B. Vaidya and R. Gupta, *Interstellar polarization by spheroidal composite grains*
- Y. Wu, T. Cheng, L. Zheng, and H. Chen, *Black carbon radiative forcing at TOA decreased during aging*
- M. A. Yurkin and M. I. Mishchenko, *Group-theoretical foundation of the random orientation in far-field electromagnetic scattering*
- E. Zubko, N. Zubko, O. Muñoz, A. M. Zakharenko, K. S. Golokhvast, A. N. Pavlov, and G. Videen, *Modeling sea-salt aerosol: light-scattering experiment and numerical simulations*
- N. Zubko, O. Muñoz, E. Zubko, M. Gritsevich, J. Peltoniemi, J. Escobar-Cerezo, M. Berg, and J. Wen, *Light scattering by volcanic sand: single-scattering particles versus particulate surface*

15:30– 22:00 Bus tour and Conference Banquet

Thursday, March 23

8:30–10:30 Atmospheric radiation and remote sensing / A. Marshak

- R. K. Chakrabarty and W. R. Heinson, *Electromagnetic light interaction with coated soot aggregates*
- P. Yang, K.-N. Liou, G. W. Kattawar, B. Baum, S. Platnick, and M. D. King, *Searching for an optimal optical property model for ice clouds*
- H. Moosmüller and C. M. Sorensen, *Large and small particle limits of single scattering albedo for homogeneous, spherical particles*
- Z. Zhang, F. Werner, H.-M. Cho, G. Wind, S. Platnick, A. S. Ackerman, L. Di Girolamo, A. Marshak, and K. Meyer, *A framework based on 2-D Taylor expansion for quantifying the impacts of sub-pixel reflectance variance and covariance on cloud optical thickness and effective radius retrievals based on the bi-spectral method*
- K. D Knobelspiesse, M. Segal-Rosenhaimer, J. Redemann, B. Cairns, and M. D. Alexandrov, *Multi-angle, polarimetric cloud observations using a radiative transfer model trained Neural Network*
- B. van Diedenhoven, A. S. Ackerman, A. M. Fridlind, and B. Cairns, *An evaluation of average ice crystal shapes to represent scattering properties of ice crystal population ensembles*
- A. Levis, *Three-dimensional microphysical tomography of clouds*
- T. V. Russkova and T. B. Zhuravleva, *3D Monte Carlo polarized radiative transfer model for simulation of light propagation into scattering media*

10:30–11:00 Coffee break

11:00–11:45 Van de Hulst Session / G. Videen

11:45–13:15 Lunch

13:15–15:30 Atmospheric radiation and remote sensing / K. Knobelspiesse

- P. G. Stegmann and P. Yang, *Electromagnetic scattering and radiation transport involving heterogeneous ice particles in the community radiative transfer model*
- A. Marshak, T. Várnai, and A. Kostinski, *Specular reflection from oriented ice crystals observed from deep space*

- I. Veselovskii, P. Goloub, T. Podvin, D. Tanre, M. Korenskiy, A. Borovoi, Q. Hu, and D. N. Whiteman, *Ice-crystal corner reflection observed with two-wavelength polarization lidar*
- B. Sun, P. Yang, and G. W. Kattawar, *A physical–geometric optics method for obtaining the scattering properties of inhomogeneous faceted particles*
- F. Xu and A. B. Davis, *Markov chain approach for computing polarized radiative transfer: formalism and application*
- Z. Wang, S. Cui, J. Yang, H. Gao, C. Liu, and Z. Zhang, *Rapid and accurate Monte Carlo simulations of radiative transfer in cloudy atmosphere*
- G. P. Milinevskyi, Y. S. Yatskiv, I. I. Syniavskyi, A. P. Bovchaliuk, O. V. Degtyaryov, M. G. Sosonkin, M. I. Mishchenko, V. K. Rosenbush, V. O. Danylevsky, Y. S. Ivanov, Y. A. Oberemok, V. M. Masley, and S. I. Moskalev, *Satellite mission Aerosol-UA for atmosphere aerosol study*
- P. Srivastava, S. Dey, S. N. Singh, and A. K. Srivastava, *Modulation of aerosol forcing by mixing state and particle morphology: case study from Delhi NCR, India*
- J. Wang, J. Ge, M. Wei, Z. Yang, and Q. Zhang, *Theoretical and experimental study on echo fluctuation suppression of cirrus cloud by millimeter wave MIMO radar*

15:30–16:00 Coffee break

16:00–17:30 Optical characterization / L. Kolokolova

- **(Invited review)** N. G. Khlebtsov and B. N. Khlebtsov, *Optimal design of Au core-shell nanoparticles with embedded Raman reporters*
- L. Al-Gebory and M. P. Mengüç, *The effect of pH value on particle agglomeration and the radiative properties of nanoparticle suspensions*
- S. A. Nouri, K. Fuller, D. A. Gregory, and A. Smith, *Angle scanning spectropolarimetry of particle deposits*
- G. Okyay and F. Enguehard, *Towards more realistic generation of numerical soot aggregates with particle overlapping*
- J. Archer, M. Kolwas, M. Wozniak, D. Jakubczyk, G. Derkochov, T. Wojciechowski, and K. Kolwas, *Observation of transient elastic light scattering properties of Sodium Dodecyl Sulphate (SDS) on colloidal silica nano-sphere aggregates from evaporating single microdroplet of suspension*

Friday, March 24

8:30–10:00 Multiple scattering / R. L. Panetta

- K. Muinonen, J. Markkanen, T. Väisänen, and A. Penttilä, *Light scattering in planetary regoliths: numerical solution*
- B. Ramezan pour and D. W. Mackowski, *Prediction of polarized reflection and transmission in plane parallel dense media*
- S. Korkin, A. Lyapustin, A. Sinyuk, and B. Holben, *Recent updates on the RT code SORD*
- L. A. Dombrovsky, D. L. Reviznikov, A. P. Kryukov, and V. Y. Levashov, *Solar probe shielding from intense thermal radiation: estimates of the effect of a generated cloud of SiC particles*
- P. G. Piedra, L. R. Llanza, and H. Moosmüller, *Optical losses due to particles on solar cells: DDA-substrate calculations and experimental validation*
- A. J. Brown, *Rayleigh coherent backscattering and circular polarization*

10:00–10:30 Astrophysical applications / O. Muñoz

- V. Rosenbush, O. Ivanova, L. Kolokolova, N. Kiselev, and V. Afanasiev, *Possible explanation of spatial variations of polarization and color of dust in comet 67P/Churyumov–Gerasimenko*
- G. Ito and T. D. Glotch, *Improving planetary remote sensing mineralogical analysis using T-matrix and radiative transfer hybrid models*

10:30–11:00 Coffee break

11:00–12:00 Astrophysical applications / O. Muñoz

- J. Herranen, J. Markkanen, and K. Muinonen, *Dynamics of interstellar dust particles in electromagnetic radiation fields*
- O. Ivanova, J.M. Dlugach, and V. Afanasiev, *The scattering properties of dust in distant comets*
- J. Markkanen, A. Penttilä, T. Väisänen, and K. Muinonen, *Numerical solution for light scattering by space-weathered planetary bodies*
- J. Martikainen, A. Penttilä, T. Kohout, H. Suhonen, S. Huotari, M. Gritsevich, and K. Muinonen, *Spectral modeling for the Chelyabinsk meteorite at UV–Vis–NIR wavelengths*

12:00–13:30 Lunch

13:30–15:30 Optical characterization / M. P. Mengüç

- **(Invited review)** M. A. Yurkin, *Estimation of solution uncertainties for parametric inverse light-scattering problems*
- W. Blohm, *Modelling light scattering in the shadow region behind thin cylinders for diameter analysis*
- C. Gerlein-Safdi, B. T. Draine, S. Frolking, and K. K. Caylor, *Microwave scattering by a dew-wetted leaf*
- O. Kemppinen, Y. Heinson, and M. Berg, *Three-dimensionality of digital holography reconstructions*
- H. S. Das and A. M. Mazarbhuiya, *Investigating the correlation between different parameters in an aggregate dust model*
- S. Hioki and P. Yang, *Estimating phase matrix from multi-viewing satellite measurements*
- R. Medina, *Light scattering studies at the El Paso del Norte Region in Texas*

15:30–16:00 Coffee break

16:00–17:30 Astrophysical applications / N. Kiselev

- P. A. Yanamandra-Fisher, W. McLean, P. Miles, A. Wesley, P. Madingsly, and L. Rossi, *Polarization of hazes and aurorae on Jupiter*
- J. Escobar-Cerezo, C. Palmer, O. Muñoz, F. Moreno, A. I. Penttilä, and K. Muinonen, *Scattering properties of large irregular cosmic dust particles at visible wavelengths*
- D. Guirado, F. Moreno, O. Muñoz, and J. Escobar-Cerezo, *Monte Carlo model of light scattered by mm-sized particles covered with micrometric irregular grains*
- R. Nežič, L. Kolokolova, S. Bagnulo, G. Borisov, A. Stinson, C. Snodgrass, H. Böhnhardt, G. H. Jones, J. Licandro, and J. de León, *Polarimetric observations of comet 67P/Churyumov–-Gerasimenko and preliminary modelling results*
- C. Legett IV, T. D. Glotch, and P. G. Lucey, *Comparison of Multiple Sphere T-matrix and Mie models for space weathering relevant materials*
- G. A. Ahmed and M. J. Boruah, *Light scattering experiments and simulated studies using DDA of interstellar dust analogue modelled with fayalite and graphite*

17:45 Farewell party