

Project C4 'Molecular Nanostructures on Surfaces'

C4.1 ,Site-Selective Coupling to Electrodes and Transport through Single Molecules (H. von Löhneysen / R. Krupke / M. Lukas)

- [C4.1:1] * R. Krupke, S. Linden, M. Rapp, and F. Hennrich, *Thin films of metallic carbon nanotubes prepared by dielectrophoresis*, Adv. Mater. **18**, 1468 (2006)
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- [C4.1:3] * F. Hennrich, R. Krupke, K. Arnold, J.A.R. Rojas Stütz, S. Lebedkin, T. Koch, T. Schimmel, and M.M. Kappes, *The Mechanism of Cavitation-Induced Scission of Single-Walled Carbon Nanotubes*, J. Phys. Chem. B **111**, 1932 (2007)
- [C4.1:4] * A. Vijayaraghavan, S. Blatt, D. Weissenberger, M. Oron-Carl, F. Hennrich, D. Gerthsen, H. Hahn, and R. Krupke, *Ultra-Large-Scale Directed Assembly of Single-Walled Carbon Nanotube Devices*, Nano Lett. **7**, 1556 (2007)
- [C4.1:5] * S. Blatt, F. Hennrich, H. v. Löhneysen, M.M. Kappes, A. Vijayaraghavan, and R. Krupke, *Influence of Structural and Dielectric Anisotropy on the Dielectrophoresis of Single-Walled Carbon Nanotubes*, Nano Lett. **7**, 1960 (2007)
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- [C4.1:7] ‡ D.K. Aswal, S.P. Koiry, V. Saxena, N. Padma, S.K. Gupta, J.V. Yakhmi, S.K. Nayak, A. Singh, and C. Sürgers, *Electrografting of organic monolayers on silicon for molecular electronics* in Physics, Chemistry and Application of Nanostructures, edited by V.E. Borisenko, S.V. Gaponenko, and V.S. Gurin, (World Scientific, Singapore, 2007) p. 541
- [C4.1:8] * C.W. Marquardt, S. Dehm, A. Vijayaraghavan, S. Blatt, F. Hennrich, and R. Krupke, *Reversible Metal-Insulator Transitions in Metallic Single-Walled Carbon Nanotubes*, Nano Lett. **9**, 2767 (2008)
- [C4.1:9] ‡ R.E.A. Kelly, M. Lukas, L.N. Kantorovich, R. Otero, W. Xu, M. Mura, E. Lægsgaard, I. Stensgaard, and F. Besenbacher, *Understanding the Disorder of the DNA Base Cytosine on the Au(111) Surface*, J. Chem. Phys. **129**, 184707 (2008)
- [C4.1:10] ‡ A.K. Chauhan, D.K. Aswal, S.P. Koiry, S.K. Gupta, J.V. Yakhmi, C. Sürgers, D. Guerin, S. Lenfant, and D. Vuillaume, *Self-assembly of the 3-aminopropyltrimethoxysilane multilayers on Si and hysteretic current-voltage characteristics*, Appl. Phys. A **90**, 581 (2008)
- [C4.1:11] ‡ A.K. Debnath, S. Samanta, A. Singh, D.K. Aswal, S.K. Gupta, J.V. Yakhmi, S.K. Deshpande, A.K. Poswal, and C. Sürgers, *Growth of iron phthalocyanine nanoweb and nanobrush using molecular beam epitaxy*, Physica E **41**, 154 (2008)
- [C4.1:12] * C. Pérez León, C. Sürgers, M. Mayor, M. Marz, R. Hoffmann, H. v. Löhneysen, *STM investigation of large π -conjugated oligomers and tetrahydrofuran codeposited on Cu(111) by pulse injection*, J. Phys. Chem. C **113**, 14335 (2009)
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- [C4.1:14] ‡ M. Lukas, R.E.A. Kelly, L.N. Kantorovich, R. Otero, W. Xu, M. Mura, E. Lægsgaard, I. Stensgaard and F. Besenbacher, *Adenine monolayers on the*

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- [C4.1:16] * C.W. Marquardt, S. Grunder, A. Błaszczuk, S. Dehm, F. Henrich, H. v. Löhneysen, M. Mayor, and R. Krupke, *Electroluminescence from a single nanotube-molecule-nanotube junction*, Nature Nanotechnology **5**, 863 (2010)
- [C4.1:17] * S. Grunder, D. Muñoz Torres, C.W. Marquardt, A. Błaszczuk, R. Krupke, and M. Mayor, *Synthesis and Optical Properties of Molecular Rods Comprising a Central Core-Substituted Naphthalenediimide Chromophore for Carbon Nanotube Junctions*, Eur. J. Org. Chem. 478 (2011)
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C4.5 'Electron Microscopy Studies of Nanoparticles and Nanostructured Materials' (D. Gerthsen)

- [C4.5:1] M. Wanner, D. Bach, D. Gerthsen, R. Werner, and B. Tesche, *Electron holography of thin amorphous carbon films: measurement of the mean inner potential and a thickness-independent phase shift*, *Ultramicroscopy* **106**, 341 (2006)
- [C4.5:2] M. Wanner, R. Werner, and D. Gerthsen, *Dynamics of gold clusters on amorphous carbon films induced by annealing in a transmission electron microscope*, *Surf. Sci.* **600**, 632 (2006)
- [C4.5:3] ‡ M. Schowalter, A. Rosenauer, D. Lamoen, P. Kruse, and D. Gerthsen, *Ab initio computation of the mean inner Coulomb potential of wurtzite-type semiconductors and gold*, *Appl. Phys. Lett.* **88**, 232108 (2006)
- [C4.5:4] * C. Zimmermann, C. Feldmann, M. Wanner, and D. Gerthsen, *Nanoscale gold hollow spheres via microemulsion approach*, *Small* **3**, 1347 (2007)
- [C4.5:5] R. Popescu, E. Müller, D. Gerthsen, M. Wanner, M. Schowalter, and A. Rosenauer, *Mean inner potential and surface strain of Au clusters analysed by transmission electron holography*, *Phys. Rev. B* **76**, 235411 (2007)
- [C4.5:6] * R. Popescu, R. Schneider, D. Gerthsen, M. Wanner, A. Böttcher, D. Löffler, P. Weiss, and M.M. Kappes, *Coarsening of mass-selected Au clusters on amorphous carbon at room temperature*, *Surf. Sci.* **603**, 3119 (2009)
- [C4.5:7] * P. Leidinger, R. Popescu, D. Gerthsen, and C. Feldmann, *Nanoscale La(OH)₃ Hollow Spheres and Fine-Tuning of Its Outer Diameter and Cavity Size*, *Small* **6**, 1886 (2010)
- [C4.5:8] * C. Kind, R. Popescu, E. Müller, D. Gerthsen, and C. Feldmann, *Microemulsion-based synthesis of nanoscaled silver hollow spheres and direct comparison with massive particles of similar size*, *Nanoscale* **2**, 2223 (2010)
- [C4.5:9] * P. Leidinger, R. Popescu, D. Gerthsen, H. Lünsdorf, and C. Feldmann, *Nanoscale copper sulfide hollow spheres with phase-engineered composition: covellite (CuS), digenite (Cu_{1.8}S), chalcocite (Cu₂S)*, *Nanoscale* **3**, 2544 (2011)
- [C4.5:10] * C. Zurmühl, R. Popescu, D. Gerthsen, and C. Feldmann, *Microemulsion-based synthesis of nanoscale TiO₂ hollow spheres*, *Solid State Sciences* **13**, 1505 (2011)
- [C4.5:11] * Li Shang, A. Naghmeh, F. Stockmar, W. Send, V. Trouillet, M. Bruns, D. Gerthsen, and G.U. Nienhaus, *One-pot synthesis of near-infrared emitting, dihydrolipoic acid capped gold clusters for cellular fluorescence imaging*, *Small* **7**, 2614 (2011)
- [C4.5:12] B. Gamm, H. Blank, R. Popescu, R. Schneider, A. Beyer, A. Götzhäuser, and D. Gerthsen, *Quantitative high-resolution transmission electron microscopy of single atoms*, *Microsc. Microanal.*, DOI:10.1017/S1431927611012232

C4.6 'Support Interactions and Thermal Stability of Size-Selected Clusters Deposited onto Single-Crystal Surfaces' (M. Kappes)

- [C4.6:1] D. Löffler, S. Jester, P. Weis, A. Böttcher, and M.M. Kappes, *C_n Films (n=50, 52, 54, 56 and 58) on Graphite: Cage Size Dependent Electronic Properties*, J. Chem. Phys. **124**, 054705 (2006)
- [C4.6:2] S. Jester, P. Weis, M. Hillenkamp, O. Ehrler, A. Böttcher, and M. Kappes, *Quantifying electron transfer during hyperthermal scattering of C₆₀⁺ from Au(111) and n-alkylthiol self-assembled monolayers*, J. Chem. Phys. **124**, 144704 (2006)
- [C4.6:3] * R. Ahlrichs, N.R.M. Crawford, A. Eichhöfer, D. Fenske, O. Hampe, M.M. Kappes, and J. Olkowska-Oetzel, *Synthesis and Structure of Two Ionic Copper-Indium-Selenolate Cluster Complexes (As(C₆H₅)₄)₂[Cu₆In₄(SeC₆H₅)₁₆Cl₄] and (As(C₆H₅)₄) [Cu₇In₄(SeC₆H₅)₂₀]*, Eur. J. Inorg. Chem. **345** (2006)
- [C4.6:4] * P. Sevillano, O. Fuhr, M. Kattaneck, P. Nava, O. Hampe, S. Lebedkin, R. Ahlrichs, D. Fenske and M.M. Kappes, *The Phosphine-Stabilized Gold-Arsenic Cluster compounds [Au₁₉(AsnPr)₈(dppe)₆]Cl₃, [Au₁₀(AsnPr)₄(dppe)₄]Cl₂, [Au₁₇(AsnPr)₆(As₂nPr)(dppm)₆]Cl₃ and [Au₁₀(AsPh)₄(dppe)₄]Cl₂ - Synthesis, Characterization, and DFT Calculations*, Angew. Chem. Int. Ed. **45**, 3702 (2006)
- [C4.6:5] M. Blom, D. Schooss, J. Stairs and M.M. Kappes, *Experimental Structure Determination of Silver Cluster Ions (Ag_n⁺, 19 ≤ n ≤ 79)*, J. Chem. Phys. **124**, 244308 (2006)
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- [C4.6:8] * A. Böttcher, M. Heil, N. Stürzl, S.S. Jester, S. Malik, F. Perez-Willard, P. Brenner, D Gerthsen, M.M. Kappes, *Nanostructuring the graphite basal plane by focused-ion-beam patterning and oxygen etching*, Nanotechnol. **17**, 5889 (2006)
- [C4.6:9] ‡ A. Lechtken, D. Schooss, J.R. Stairs, M.M. Blom, F. Furche, B. von Issendorff, and M.M. Kappes, *Au₃₄⁻: A Chiral Gold Cluster?*, Angew. Chem. Int. Ed. **46**, 2944 (2007)
- [C4.6:10] * P. Sevillano, O. Fuhr, O. Hampe, S. Lebedkin, E. Matern, D. Fenske, and M.M. Kappes, *Synthesis, Characterization and X-Ray Structure Determination of [Au₁₈(P)₂(PPh)₄(PPh)(dppm)₆]Cl₃*, Inorg. Chem. **46**, 7294 (2007)
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- [C4.6:12] * P. Sevillano, O. Fuhr, O. Hampe, S. Lebedkin, C. Weiss, R. Ahlrichs, D. Fenske, and M.M. Kappes, *Synthesis, Characterization, and quantum mechanical calculations of [Au₁₈Se₈(Dppthph)₆] Cl₂*, Eur. J. Inorg. Chem. **33**, 5163 (2007)
- [C4.6:13] * E. Oger, N.R.M. Crawford, R. Kelting, P. Weis, M.M. Kappes, and R. Ahlrichs, *Boron cluster cations: transition from planar to cylindrical structures*, Angew. Chem. Int. Ed. **46**, 8503 (2007)
- [C4.6:14] ‡ J.B. Tracy, M.C. Crowe, J.F. Parker, O. Hampe, C.A. Fields-Zinna, A. Dass, and R.W. Murray, *Electrospray Ionization Mass Spectrometry of Uniform and Mixed Monolayer Nanoparticles: Au₂₅[S(CH₂)₂Ph]₁₈ and Au₂₅[S(CH₂)₂Ph]_{18-x}(SR)_x*, J. Am. Chem. Soc. **129**, 16209 (2007)

- [C4.6:15] * A. Eichhöfer and O. Hampe, *Investigating the thermolysis products of $[Cd_{10}Se_4(SePh)_{12}(PnPr_3)_4]$ – the new cluster ion $[Cd_{17}Se_4(SePh)_{28}]^{2-}$* , J. Cluster Sci. **18**, 494 (2007)
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- [C4.6:22] * A. Lechtken, C. Neiss, J. Stairs, and D. Schooss, *Comparative study of the structures of copper, silver and gold icosamers – influence of metal type and charge state*, J. Chem. Phys. **129**, 154304 (2008)
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- [C4.6:27] ‡ * D. Löffler, N. Bajales, M. Cudaj, P. Weis, S. Lebedkin, A. Bihlmeier, D.P. Tew, W. Klopper, A. Böttcher, and M.M. Kappes, *Non-IPR C_{60} Solids*, J. Chem. Phys. **130**, 164705 (2009)
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- [C4.6:33] S.S. Jester, D. Löffler, P. Weis, A. Böttcher, and M.M. Kappes, *Morphology of C_n thin films ($50 \leq n < 60$) on graphite: Inference of energy dissipation during hyperthermal deposition*, Surf. Sci. **603**, 1863 (2009)
- [C4.6:34] ‡ * J. Fang, S. Du, S. Lebedkin, Z. Li, R. Kruk, M. Kappes, and H. Hahn, *Gold Mesosstructures with Tailored Surface Topography and Their Self-Assembly Arrays for Surface-Enhanced Raman Spectroscopy*, Nano Lett. **10**, 5006 (2010)
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C4.8 'Fabrication and Optical Characterization of Metal Nanostructures' (R. Schuster)

- [C4.8:1] R. Schuster, *Electrochemical Microstructuring with Short Voltage Pulses*, ChemPhysChem **8**, 34 (2007)
- [C4.8:2] X. Ma, A. Bán, and R. Schuster, *Electrochemical Machining of Gold Microstructures in LiCl/Dimethyl Sulfoxide*, ChemPhysChem **11**, 616 (2010)
- [C4.8:3] X. Ma and R. Schuster, *Locally Enhanced Cathodoluminescence of Electrochemically Fabricated Gold Nanostructures*, J. Electroanal. Chem. **662**, 12 (2011)

C4.9 'Electrochemistry with an Electron Beam – Local Metal Deposition in Ionic Liquids and Molten-Salt Thin Films (R. Schuster)

- [C4.9:1] V. Halka, M.J. Schmid, V. Avrutskiy, X. Ma, and R. Schuster, *Electron-Beam-Induced Deposition of Metallic Microstructures from a Molten-Salt Film on Conductive and Nonconductive Substrates*, *Angew. Chem. Int. Ed.* **50**, 4692 (2011)

C4.11 'Theory and Simulation of Molecular Materials and Functionality' (P. Wölfle / F. Evers)

- [C4.11:1] * S. Bera, A. Arnold, F. Evers, R. Narayanan, and P. Wölfle, *Elastic properties of graphene flakes: Boundary effects and lattice vibrations*, Phys. Rev. B **82**, 195445 (2010)
- [C4.11:2] * P.M. Ostrovsky, M. Titov, S. Bera, I.V. Gornyi, and A.D. Mirlin, *Diffusion and criticality in undoped graphene with resonant scatterers*, Phys. Rev. Lett. **105**, 266803 (2010)
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