Ordnung wurde mittels Röntgenmethoden untersucht, wobei an allen Proben $\theta/2\theta$-scans und Rocking Curves am Synchrotron CHESS, Cornell University, und an den dicksten Schichten zusätzlich Polfigur Messungen durchgeführt wurden. Es wurden vier verschiedene Kristallebenen von PSP gefunden, die parallel zur Oberfläche sind. Drei davon lieferten auf der Oberfläche liegende Moleküle und eine davon stehende Moleküle. Genauere Untersuchungen ergaben eine Gesamtheit von 11 epitaktischen Beziehungen, die auf Grund der symmetrischen KCl(100) Oberfläche eine Vierfachsymmetrie aufweisen. Vergleiche der Proben, die unter verschiedenen Wachstumsbedingungen gewachsen sind, ergeben Abhängigkeiten von Temperatur und Zeit. Es konnte gezeigt werden, dass das Wachstum mit Nadeln beginnt, und bei längeren Wachstumszeiten der Anteil an terrassenförmigen Strukturen immer mehr zunimmt. TEM/TED Untersuchungen ermöglichten auch eine Zuordnung der Kristallorientierungen zu den unterschiedlichen Morphologien. Obwohl die Wachstumsdynamik offensichtlich sehr komplex ist, da sehr viele verschiedene epitaktische Beziehungen gefunden wurden, kann man Gemeinsamkeiten erkennen. Alle haben eine auffällige Parallelität mit der [011]KCl Richtung. Betrachtet man allerdings die Positionen der einzelnen Moleküle in Bezug auf die Oberflächenatome kann keine gute Übereinstimmung gefunden werden. Das bedeutet, dass das epitaktische Wachstum nicht auf die Anordnung einzelner Moleküle auf der Oberfläche zurückzuführen ist, sondern dass es sich bei der Ausrichtung um eine Clustereigenschaft handelt.

F-FKP8: Proton Transport through Carbon Nanotubes

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Proton conduction through membranes is fundamental to many biological and technological processes ranging from ATP synthesis in living organisms to electrical power generation in hydrogen fuel cells. One-dimensional chains of hydrogen bonded water molecules provide excellent conductors for protonic currents through pores across membranes. Here we report on the results of computer simulations of proton transfer along such water chains inside carbon nanotubes. Ab initio molecular dynamics and an empirical valence bond model yield similar structures and time scales. We find that the proton mobility along 1D water chains exceeds that in bulk water by a factor of 40, but is reduced if orientational defects are present in the water chain. Excess protons interact with hydrogen-bonding defects through long-range electrostatics, resulting in coupled motion if proton and defects.

F-FKP9: Preparation and magnetic properties of $LaFe_{12}O_{19}$ hexaferrite

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In the group of M-type hexaferrites $LaFe_{12}O_{19}$ shows distinct magnetic behavior at low temperatures. The magnetocrystalline anisotropy at 4.2K increases more than 200% compared with its value at room temperature. It was reported that the increase in anisotropy is related to a change from Fe^{3+} state to Fe^{2+} at the 2a site in order to compensate charge excess due to the La valency. Due to difficulties in preparing this material no detailed investigations took place.

Therefore an appropriate method for preparation of La hexaferrite has been found using co-precipitation and mechanical alloying. Annealing temperature and quenching where found as significant factors whereas the annealing duration is arbitrary. The samples have been investigated using XRD and $LaFeO_3$ and Fe_2O_3 were found as secondary phases. Although varying the weight ratio of the precursors according to the method and varying the annealing temperature, it was impossible to avoid formation of secondary phases. The sample with the highest amount of $LaFe_{12}O_{19}$ phase was obtained for the method of coprecipitation with 50% La excess, annealed at 1365^{o}C. The saturation magnetization was estimated as 66.8emu/g using a M over $1/H^2$ plot of a hystersis loop measured in a pulsed field magnetometer up to 4.9T. Comparing this value with the saturation magnetization of pure La hexaferrite gives an estimation of the hexaferrite phase concentration of around 95%. The increase in anisotropy has been veryfied by measurement using the SPD technique. The anisotropy field was found to be $\mu_0 H_A$=4.01T at 10K compared with 1.64T at room temperature.

F-FKP10: Whispering Gallery Modes in Two-dimensional Bended Photonic Crystal Cavities

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Bended photonic crystal as an extension of curvilinear photonic crystals, which we're recently invented, is introduced in this study. Individual scatterers with different size are arranged in way that they are all locally hexagonal, possess a band gap, and high-Q Whispering gallery modes are formed within the cavity.

F-FKP11: Femtosecond near-field spectroscopy of conjugated polymers and polymer nanospheres

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As demonstrated over the last decade, conjugated polymers can be used as the active medium in organic light emitting diodes, light-emitting electrochemical cells, photovoltaic cells, photodetectors, lasers, field-effect transistors, and all-polymer integrated circuits. Ultrafast time-resolved spectroscopy is a powerful tool for investigating elementary excitation dynamics and has contributed significantly to the understanding of the optical and electronic properties of these materials. Their morphology is often complex and gives rise to order effects and nanoscale size effects, which are key issues in the ongoing drive towards miniaturisation of organic electronic and photonic structures. Therefore the basic understanding as well