

CPP 6: Poster Session I - Molecular Electronics and Wetting

Time: Monday 16:30–18:30

Location: CPPp

CPP 6.1 Mon 16:30 CPPp

Azobenzene molecular switches: Testing the charge transport in a self-assembled monolayer under light stimulus — ●VLADYSLAV SAVCHENKO and OLGA GUSKOVA — Leibniz Institute of Polymer Research Dresden (IPF Dresden), Hohe Str. 6, Dresden

The azobenzene-based molecules organized in chemisorbed self-assembled monolayers (SAMs) on the surfaces of electrodes work as photoswitches of the conductance, the electrode work function, and the magnetization/magnetic transitions. The aim of this computational study is to predict how the configurational rearrangements of the building blocks in a molecular switch consisting of azobenzene moiety and bithiophene spacer linked to a short alkanethiol affect the structural, electronic, and transport properties in SAMs.

The financial support of the Deutsche Forschungsgemeinschaft, project GU1510 5-1 "Optically reconfigurable nanoscale junctions for organic electronics" is highly appreciated.

CPP 6.2 Mon 16:30 CPPp

Ordered donor-acceptor complex formation and electron transfer in co-deposited films of structurally dissimilar molecules — ●ANDREAS OPITZ¹, C. PETER¹, B. WEGNER^{1,2}, H.S.S.R. MATTE¹, A. RÖTTGER¹, T. FLORIAN¹, X. XU¹, P. BEYER¹, L. GRUBERT¹, S. HECHT¹, V. BELOVA³, A. HINDERHOFER³, F. SCHREIBER³, C. KAPSER⁴, J. PFLAUM⁴, Y. ZHANG⁵, S. BARLOW⁵, S.R. MARDER⁵, and N. KOCH^{1,2} — ¹Humboldt-Universität zu Berlin — ²Helmholtz-Zentrum Berlin für Materialien und Energie — ³Universität Tübingen — ⁴Universität Würzburg — ⁵Georgia Institute of Technology Atlanta (USA)

Electrical and optoelectronic properties of organic semiconductor thin films can be tailored by co-deposition of molecular materials. At the moment it is difficult to predict a priori the resulting morphology (like phase separation or mixed crystals) for a selected material combination. Here, we study electron transfer between planar, rod-like electron donor molecules (DIP, PEN, DBTTF) and a non-planar electron acceptor molecule [Mo(tfd)₃] in co-evaporated films by analyzing morphological, vibrational and optical properties. [1]

The resulting morphology of the co-deposited films (phase separation or mixed crystals) can be rationalized within the laws of thermodynamics. Therefore, it is necessary to consider structural incompatibility of the molecules in terms of interaction energies between the molecules as well as the Coulomb attraction between molecular ions after the formation via ground-state electron transfer.

[1] A. Opitz et al., *J. Phys. Chem. C* **124** (2020) 11023-11031.

CPP 6.3 Mon 16:30 CPPp

Solid-state effects in the electronic and optical properties of donor-acceptor co-crystals — ●MICHELE GUERRINI^{1,2}, ANA M. VALENCIA^{1,2}, and CATERINA COCCHI^{1,2} — ¹Carl von Ossietzky Universität Oldenburg, Institute of Physics, 26129 Oldenburg, Germany — ²Humboldt-Universität zu Berlin, Physics Department and IRIS Adlershof, 12489 Berlin, Germany

In the framework of density functional theory and many-body perturbation theory, we investigate the role of solid-state effects (SSEs) in the electronic and optical properties of a donor-acceptor (DA) co-crystal composed of quarterthiophene donor molecules p-doped by (fluorinated)-tetracyanoquinodimethane. We find that the hybridization of the frontier electronic states is hindered along specific directions in the crystal cell, in favor of segregated states. We rationalize this behavior in terms of wave-function delocalization in the co-crystals competing and prevailing over the local interactions at the DA interfaces [1,2].

The anisotropic optical absorption spectra of the co-crystals are highly anisotropic and are dominated by a bright charge-transfer exciton at lowest-energy polarized along the direction of the DA stacks.

Our result contribute to rationalize the fundamental mechanisms ruling the formation of charge-transfer excitons in DA co-crystals.

[1] A M Valencia and C Cocchi, *JPC* 2019, 123, 9617

[2] A M Valencia; M Guerrini and C Cocchi, *PCCP* 2020, 22, 3527

CPP 6.4 Mon 16:30 CPPp

Uncovering the enhancement mechanisms of thermoelectric performance of PEDOT: PSS films after physical-chemical

dedoping — SUO TU, TING TIAN, ANNA-LENA OECHSLE, and ●PETER MÜLLER-BUSCHBAUM — Physik-Department, Lehrstuhl für Funktionelle Materialien, Physik Department, Technische Universität München, James-Frank-Str. 1, 85748 Garching, Germany

PEDOT: PSS is the most studied conducting polymer system due to their intrinsically high electrical conductivity, low thermal conductivity, and high mechanical flexibility in thermoelectric (TE) devices. The energy conversion efficiency of a TE material is evaluated by a dimensionless figure of merit ZT and defined as $ZT = S^2\sigma T/k$ where S is the Seebeck coefficient, σ is the electrical conductivity, T is the absolute temperature, k is the thermal conductivity, and $S^2\sigma$ is defined as the power factor (PF). Nevertheless, it is generally acknowledged that it is difficult to achieve a high ZT value of TE materials, due to the fact that the parameters S, σ , and k are interdependence as a function of carrier concentration and hard to be optimized simultaneously. In this work, we adopt a combination of DMSO addition and subsequent DMSO/salt mixture post-treatment to engineer TE performance of PEDOT: PSS thin films. Results show that the as-obtained PEDOT: PSS film presents a maximum PF of 105.2 $\mu\text{W}/(\text{m}\cdot\text{K}^2)$, which is ~ 1750 -fold larger than that of pristine film. The origin and mechanism of the underlying improvement is systematically investigated by various characterizations to gain a more profound understanding of the fundamental nature of modified PEDOT: PSS films.

CPP 6.5 Mon 16:30 CPPp

Dependence of Electron and Ion Transport on the Intermolecular Coupling in Fluorinated Phthalocyanine Thin Films as Electrochromic Materials — ●THI HAI QUYEN NGUYEN¹, MARIUS PELMUS², MICHAEL SCHÄFER¹, SERGIU M. GORUN² und DERCK SCHLETTWEIN¹ — ¹Justus Liebig University Giessen, Institute of Applied Physics — ²Seton Hall University, Department of Chemistry and Biochemistry

Phthalocyanines as organic ionic and electronic conductors are of great interest for the application in electrochromic devices. An influence of the degree of fluorination in copper phthalocyanines on the intermolecular coupling in the solid state and, thus, on the rate of electron and ion transport was observed: For $F_{16}PcCu$ the transport of electrons was faster than the diffusion of ions as opposed to $F_{64}PcCu$. In this work, thin films of a new type of fluorinated phthalocyanine ($F_{40}PcCu$) were prepared by physical vapor deposition. The dependence of the intermolecular coupling on the film thickness was analyzed by in situ UV/Vis spectroscopy. The electrochromic characteristics were studied by electrochemical and spectroelectrochemical measurements with an aqueous solution of *KCl* as electrolyte. The films provided a well-balanced, equally fast transport of electrons and ions. The optical absorption spectra revealed reversible changes of the films upon reduction with intercalation of the K^+ counterions and re-oxidation with extraction of the counterions. Fast and stable electrochromic switching of the films was achieved over at least 200 cycles. For a 1:1 mixed film of $F_{16}PcCu$ and $F_{64}PcCu$ a similar situation could be achieved.

CPP 6.6 Mon 16:30 CPPp

In Situ and In Operando KPFM Studies on Hexadecafluoro-Copper-Phthalocyanine ($F_{16}PcCu$) in OFET to Access Electrical Contact Resistance and Energy Level Alignment — ●PASCAL SCHWEITZER, CLEMENS GEIS, and DERCK SCHLETTWEIN — Justus-Liebig-Universität Gießen, Institut für Angewandte Physik, Heinrich-Buff-Ring 16, D-35392 Gießen, GERMANY

Contact resistances are considered the major limiter of performance of organic field effect transistors (OFET). Perfluorinated copper-phthalocyanine ($F_{16}PcCu$) is a promising material as n-conductor to build complementary logical circuits. It is characterized by chemical stability under ambient conditions and a reasonably high charge carrier mobility. In this work, we used *in operando* Kelvin probe force microscopy under high vacuum to study the influence of contact resistances at the source and drain contacts on the OFET performance. Potentiometry at different applied external voltages revealed voltage drops at the interfaces to the source and drain metal contacts which allow for calculation of contact resistances. Thereby, the field-effect charge carrier mobility of $F_{16}PcCu$ was corrected for contact effects. Significantly higher values were obtained. *In situ* KPFM during film growth on polycrystalline gold visualizes film formation and corre-

sponding shifts of energy levels confirming the existence of an injection barrier. We conclude, that tuning the energy level alignment and the interface effects to reduce contact resistances will lead to considerably improved performance of $F_{16}PcCu$ in OFET.

CPP 6.7 Mon 16:30 CPPp

Coupled organic-inorganic nanostructures (COINs) with mixed organic linker molecules — ●FLORIAN GRASSL¹, ALADIN ULLRICH¹, AHMED E. MANSOUR^{3,4}, SHAIMAA ABDALBAQI¹, NORBERT KOCH^{3,4}, ANDREAS OPITZ³, MARCUS SCHEELE², and WOLFGANG BRÜTTING¹ — ¹Institute of Physics, University of Augsburg, Germany — ²Institute for Physical and Theoretical Chemistry, University of Tübingen, Germany — ³Institut für Physik & IRIS Adlershof, Humboldt-Universität zu Berlin, Germany — ⁴Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany

COINs are composed of semiconducting inorganic nanoparticles and organic semiconductor molecules as ligands, which are covalently coupled to the surface of the nanoparticles [1]. A well-known organic ligand is 1,2-ethanedithiol (EDT) [2]; but it has the drawback of being very short as compared to the native oleic acid ligands. In this work we study the ligand Zinc β -tetraaminophthalocyanine (Zn4APc) [3], which has a desirable length comparable to oleic acid, but a low ligand exchange behaviour. To overcome this problem, a mixture of EDT and Zn4APc has been used. The binding of the ligands are compared by morphological, electronic, optical and electrical properties.

[1] M. Scheele, *Bunsen Magazin*, 2014, 4, 168

[2] J. Luther et al., *Nano Lett.*, 2008, 8, 3488

[3] J. Lauth et al., *Angew. Chem. Int. Ed.*, 2017, 56, 14061

CPP 6.8 Mon 16:30 CPPp

Impact of thermal treatment and humidity exposure on surface concentration and work function of PEDOT:PSS thin films — ●AMAN ANAND^{1,2}, JOSE PRINCE MADALAIMUTHU^{1,2,3}, MAXIMILIAN SCHAAL⁴, FELIX OTTO⁴, MARCO GRUENEWALD⁴, SHAHIDUL ALAM^{1,2}, TORSTEN FRITZ⁴, ULRICH S. SCHUBERT^{1,2}, and HARALD HOPPE^{1,2} — ¹Laboratory of Organic and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, Humboldtstraße 10, 07743 Jena, Germany — ²Center for Energy and Environmental Chemistry Jena (CEEC Jena), Friedrich Schiller University Jena, Philosophenweg 7a, 07743 Jena, Germany — ³Abbe School of Photonics, Friedrich Schiller University Jena, Albert-Einstein-Straße 6, 07745 Jena, Germany — ⁴Institute of Solid State Physics, Friedrich Schiller University Jena, Helmholtzweg 5, 07743 Jena, Germany

Poly (3,4-ethylenedioxythiophene):poly(styrene sulfonate) (PEDOT:PSS) is the most common and successful commercial conductive polyelectrolyte in the field of optoelectronics. In the present work, we have investigated the impact of the thermal treatments and relative humidity during film casting or storage on the work function of PEDOT:PSS films made from various commercial formulations. We find clear trends between the processing conditions and absolute work function which could be associated with the metal ions on the surface of the films. As a conclusion, we can suggest suitable processing parameters for a wide range of formulations and targeted electronic properties

CPP 6.9 Mon 16:30 CPPp

Compatible solution-processed interface materials for improving efficiency and prolonging the lifetime of organic solar cells — ●ZHUO XU^{1,2}, JOSE PRINCE MADALAIMUTHU^{1,2,3}, JOSEF BERND SLOWIK^{1,2}, RICO MEITZNER^{1,2}, SHAHIDUL ALAM^{1,2}, ULRICH S. SCHUBERT^{1,2}, and HARALD HOPPE^{1,2} — ¹Laboratory of Organic and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, Humboldtstraße 10, 07743 Jena, Germany. — ²Center for Energy and Environmental Chemistry Jena (CEEC Jena), Friedrich Schiller University Jena, Philosophenweg 7a, 07743 Jena, Germany. — ³Abbe School of Photonics, Friedrich Schiller University Jena, Albert-Einstein-Straße 6, 07745 Jena, Germany

The electron transport layer (ETL) in an organic solar cell is one of the main components that play a crucial role in the separation of charges, improving efficiency, and increasing the lifetime of the solar cells. Herein, solution-processed PBDTTT-CT: PC70BM based organic solar cells were fabricated using PDINO, Titanium Oxide (TiOx), and the mixture of PDINO and TiOx as an ETL. A power conversion efficiency (PCE) of 7.9% was achieved when a mixture of PDINO and TiOx was used as an ETL, which is one of the highest reported efficiency for halogen-free solvent processed PBDTTT-CT:PC70BM based polymer solar cells (PSCs). Furthermore, lower recombination,

higher exciton dissociation probability, and longer lifetime were observed from the same device that indicates the selectivity of ETL can effectively improve the performance and stability of the solar cells.

CPP 6.10 Mon 16:30 CPPp

Observing Singlet Fission in Time-Energy-Momentum Space — ●ALEXANDER NEEF¹, SEBASTIAN HAMMER², SAMUEL BEAULIEU¹, SHUO DONG¹, TOMMASO PINCELLI¹, JULIAN MAKLAR¹, MARTIN WOLF¹, LAURENZ RETTIG¹, JENS PFLAUM², and RALPH ERNSTORFER¹ — ¹Fritz Haber Institute of the Max Planck Society, Faradayweg 4-6, 14195 Berlin, Germany — ²Experimental Physics VI, Julius-Maximilians-Universität Würzburg, 97074 Würzburg, Germany

Under suitable conditions, the optically excited singlet exciton in organic crystals can split into two triplet excitons, a process known as singlet fission (SF) [Michl, 2010]. Though extensively studied, the proposed mechanisms for SF [Berkelbach, 2013] have not yet been unambiguously verified experimentally.

By means of XUV time- and angle-resolved photoemission spectroscopy (trARPES) performed on crystals of the archetypical SF compounds pentacene and tetracene, we are - for the first time - able to directly observe the transient behavior of the excited singlet and triplet states (S_1 and T_1) in momentum space. This allows us to compare the S_1 and T_1 energies with respect to the dispersing valence band within one measurement, implying that the T_1 energy is significantly smaller than previous estimates. Exploiting the multi-dimensionality of trARPES, we can furthermore decompose the excited states in pentacene by their unique signature in momentum space, thereby suggesting a strong mixing of charge-transfer (CT) states into S_1 and hence a CT-mediated superexchange mechanism of SF.

CPP 6.11 Mon 16:30 CPPp

Influence of solvent composition on optical and morphological properties of PTQ10:BTP-4F bulk heterojunctions — ●LUKAS SPANIER, XINYU JIANG, and PETER MÜLLER-BUSCHBAUM — TU München, Physik-Department, Lehrstuhl für Funktionelle Materialien, Garching, Germany

Organic solar cells have recently gained increasing attention due to their rapidly increasing efficiencies as well as the relatively easy scalability in their production. However, their manufacture relies heavily on the use of halogenated solvents, as organic solar cells made with environmentally friendly solvents often suffer from major performance degradation. We investigate and compare the changes in morphology and the electro-optical behaviour of PTQ10:BTP-4F thin films processed from various solvents, utilising grazing-incidence X-ray scattering methods. We show the impact of solvent composition on the formation of polymer:non-fullerene acceptor bulk heterojunction films, affecting the resulting change in the performance of the organic solar cells.

CPP 6.12 Mon 16:30 CPPp

Qualification of Thieno-Quinoxaline Based Polymers for Application in Non-Fullerene Organic Solar Cells — ●MD MOIDUL ISLAM^{1,2}, SHAHIDUL ALAM^{1,2}, RICO MEITZNER^{1,2}, CHRISTOS L. CHOCHOS^{3,4}, ULRICH S. SCHUBERT^{1,2}, and HARALD HOPPE^{1,2} — ¹Laboratory of Organic and Macromolecular Chemistry (IOMC), Friedrich Schiller University Jena, Humboldtstraße 10, 07743 Jena, Germany — ²Center for Energy and Environmental Chemistry Jena (CEEC Jena), Friedrich Schiller University Jena, Philosophenweg 7a, 07743 Jena, Germany — ³Institute of Chemical Biology, National Hellenic Research Foundation, 48 Vassileos Constantinou Avenue, Athens 11635, Greece. — ⁴Advent Technologies SA, Patras Science Park, Stadiou Street, Platani-Rio, 26504, Patra, Greece

Next-generation organic solar cells should not only be improved in performance but also should be environment-friendly throughout the production process. The processing of polymer-based solar cells with green solvents are highly desirable to make environmental friendly solar cells. In this study, we present bulk heterojunction polymer solar cells based on the thieno-quinoxaline based polymers blended with non-fullerene acceptor (NFA) in the non-halogenated solvent. Solar cells were prepared in conventional and inverted architecture, in order to investigate the material properties various spectroscopic measurements were performed in the pristine and blend films, as well as in the solutions. Finally, photovoltaic performances were investigated by different opto-electrical characterizations.

CPP 6.13 Mon 16:30 CPPp

Simulation of light-induced exciton diffusion and quench-

ing on SWCNTs — ●MANUEL ROMMEL¹, RALPH KRUPKE^{1,2}, and WOLFGANG WENZEL¹ — ¹Institute of Nanotechnology, Karlsruhe Institute of Technology, 76021 Karlsruhe — ²Institute of Materials Science, Technische Universität Darmstadt, 64287 Darmstadt

The diffusion of excitons and charge carriers and the exciton loss processes like decay and quenching play an important role for the current characteristics in systems with light-induced charge carriers. A power-dependent photocurrent measurement on polymer-wrapped semiconducting single walled carbon nanotubes (SWCNT) has revealed a sub-linear scaling of the electric current with laser power.

Here, we present a modified Monte-Carlo-based simulation with a fixed timestep and a pulsed laser. It models the stochastic generation, diffusion, collision and quenching of excitons, electrons and holes in 1D. Our results show that there are two regimes depending on laser power. At low laser power, current scales linearly with laser power. For high laser power (which coincides with the onset of exciton-exciton-quenching), the exponent of the power dependence becomes 0.63, which is very close to the experimental value of 0.59 ± 0.08 . Furthermore, we can show that even a perfectly symmetric 1D system, where both electrodes favor the same charge carrier, exhibits a photocurrent if the illumination is asymmetric. We also show that power law characteristics depend on the SWCNT length.

This gives an insight into diffusion in SWCNTs and highlights the importance of exciton-exciton-quenching in SWCNT devices.

CPP 6.14 Mon 16:30 CPPp

In-situ sputter deposition of electrodes for non-fullerene organic photovoltaics application — ●XINYU JIANG¹, SIMON J. SCHAPER¹, MATTHIAS SCHWARTZKOPF², STEPHAN V. ROTH^{2,3}, JONAS DREWES⁴, OLEKSANDR POLONSKYI⁴, and PETER MÜLLER-BUSCHBAUM^{1,5} — ¹Technische Universität München, Physik-Department, Lehrstuhl für Funktionelle Materialien, James-Frank-Str. 1, Garching, Germany — ²DESY, Notkestr. 85, 22607 Hamburg, Germany — ³KTH, Department of Fibre and Polymer Technology, SE-100 44 Stockholm, Sweden — ⁴Christian Albrechts-Universität zu Kiel, Materialverbunde Lehrstuhl, Materialwissenschaft Institut, Kaiserstr. 2, D-24143 Kiel, Germany — ⁵Heinz Maier-Leibnitz Zentrum (MLZ), Technische Universität München, Lichtenbergstr. 1, 85748 Garching, Germany

Electrode quality of photovoltaic devices plays a very important role in device performance. The metal growth process directly influences the material density, electrical conductivity and interface contact of the electrode. For understanding the mechanism of aluminium cluster growth on non-fullerene organic solar cells, we use in-situ grazing-incidence small-angle X-ray scattering (GISAXS) to observe detailed information during the sputtering process. We find that the early stages of Al cluster growth on the non-fullerene active layers determine the later stages and strongly influence the percolation threshold. Furthermore, the cluster growth varies for active layers with an additional electron blocking layer. These findings are of great importance for improving the performance of the photovoltaic devices.

CPP 6.15 Mon 16:30 CPPp

Sputter Deposition of Silver on Nanostructured PMMA-b-P3HT Copolymer Thin Films — ●MARC GENSCHE^{1,2}, MATTHIAS SCHWARTZKOPF¹, CALVIN BRETT^{1,3}, SIMON SCHAPER², LUCAS KREUZER², NIAN LI², WEI CHEN², SUZHE LIANG², JONAS DREWES⁴, OLEKSANDR POLONSKYI⁴, THOMAS STRUNSKUS⁴, FRANZ FAUPEL⁴, PETER MÜLLER-BUSCHBAUM^{2,5}, and STEPHAN ROTH^{1,3} — ¹DESY, Hamburg, Germany — ²TUM, München, Germany — ³KTH, Stockholm, Sweden — ⁴CAU, Kiel, Germany — ⁵MLZ, München, Germany

Nanostructured polymer-metal-composite films demonstrate great perspectives for optoelectronic applications, e.g. as sensors or organic photovoltaics (OPV). To enhance properties of such devices the metal cluster self-assembly process needs to be understood. We correlate the emerging nanoscale morphologies with electronic properties and quantify the difference in silver growth, comparing the diblock copolymer template with its corresponding homopolymer thin film counterparts. In this contribution, we investigate the silver cluster morphology during the growth on a PMMA-b-P3HT diblock copolymer template. We applied with grazing incidence small-angle X-ray scattering (GISAXS) to observe the cluster formation. Our study reveals the selective wetting of silver on one of the polymer blocks and the influence of the template on the percolation behavior of the silver layer, which is measured with resistance measurements during the sputter deposition.

CPP 6.16 Mon 16:30 CPPp

Memory effects in polymer brushes showing co-nonsolvency effects — ●SIMON SCHUBOTZ^{1,2}, PETRA UHLMANN¹, ANDREAS FERY^{1,2}, JENS-UWE SOMMER^{1,2}, and GÜNTER K. AUERNHAMMER^{1,3} — ¹Leibniz-Institut für Polymerforschung Dresden e.V., 01069 Dresden, Germany — ²Technische Universität Dresden, 01069 Dresden, Germany — ³Max-Planck-Institut für Polymerforschung, 55128 Mainz, Germany

Some polymer brushes show a co-nonsolvency effect: They collapse in a mixture of two good solvents at some specific mixing ratio. Previous studies focused on the response of brushes which are entirely covered by a liquid. Here, we concentrate on partial wetting of co-nonsolvent polymer brushes, i.e., on the dynamics of a three-phase contact line moving over such brushes. We demonstrate that the wetting behavior depends on the wetting history of the polymer brush. We use Poly(N-isopropylacrylamide) (PNiPAAm) brushes and water and ethanol as good solvents. In water/ethanol mixtures, the brush thickness is a non-monotonous function of the ethanol concentration. The memory of brushes is tested by consecutively depositing drops of increasing size at the same position. Previously deposited drops induce changes in the brush that modifies the wetting behavior (advancing contact angle) of subsequent drops. We believe that the change in the contact angle is induced by adaptation like swelling of or liquid exchange in the brush due to the drop on top.

CPP 6.17 Mon 16:30 CPPp

Quantification of Interfacial Fracture in Geometrically Confined Soft Elastomers by a Combined Analysis of Contact Force and Pressure — ●HARES WAHDAT and ALFRED CROSBY — Polymer Science and Engineering Department, University of Massachusetts Amherst, Amherst, MA, USA

Interfacial fracture occurs in many different situations ranging from the failure of polymer adhesives to the growth of wounds in human skin. Commonly, interfacial fracture can be studied by inserting a needle into a soft material and apply positive pressure while recording images. The combination of pressure and corresponding images has revealed insight into the interfacial fracture properties of gels or biological tissues. Still, the need for recording images can complicate the study of non-transparent samples or in-vivo studies. Here, we present experiments, in which the pressure-change and the corresponding contact between a rigid probe in contact with micrometer-thin soft elastomers, were analyzed to quantify the critical strain energy release rate for interfacial fracture. The modeling of interfacial fracture does not require image recording, making our experiment and analysis suitable for quantitative studies of interfacial fracture in complicated systems such as biological tissues.