

Abstract Submitted
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Hydrophilic finishing of LDPE films using plasma treatment DIETER F. IHRIG, JENS EGGEMANN, RICHARD SCHUHMACHER, MICHAEL LICHT, University of South Westfalia, Germany — To harvest atmospheric water (dew) we use polymer films (LDPE/LLDPE) which allows cooling down a device just by looking through the atmospheric window at 8 to 13 micron into the cold upper atmosphere. First results from such tools are published in [1]. Problems are resulting of the very high hydrophobic properties of PE. Conventional plasma based procedures are able to generate polar groups on the surface of polymers, but they are not stable. To stabilize this groups we coated the films with an organic layer or a plasma polymerization process.. By this we are able to generate a contact angle on the film of 55 to 60 degr. stable over several month. Such a technique is also interesting as a pretreatment for printing on films with water based lacque. It will be given an introduction in winning water using radiation exchange and results of field-tests. The changing contact-angle over the time on plasma treated and films with organic layer including XPS will be shown. First results of a structure with hydrophobic and hydrophilic areas present the capability of a surface like the desert beetle *Stenocara*. The project was funded by the German Federal Ministry of Education and Research (FKZ 02WD0458).

[1] Jour. Phys. Chem. of the Earth, Elsevier 33, 86 - 91 (2008)

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