

## Institut für Physik Physikalisches Kolloquium gemeinsam mit dem SFB HYP-MOL



## Donnerstag, 08.01.2026, 15:30 Uhr

Ort: Reichenhainer Str. 90; Zentrales Hörsaal- und Seminargebäude, Raum C10.013

## Dr. Raanan Carmieli

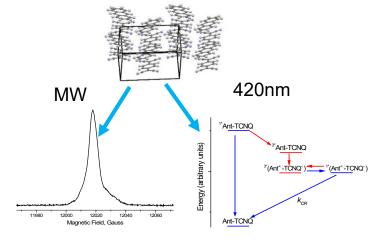
Weizman Institute of Science, Rehovot, Israel

## **EPR Study of charge transfer co-crystals** Structure/Function Relationship

Organic charge-transfer (CT) co-crystals exhibit unique electronic and magnetic properties depending on their molecular packing, structures and aggregated states which make them attractive materials for electronic devices.

Dibenzotetrathiafulvalene (DBTTF)/2,3,5,6-tetrafluoro-7,7,8,8-tetracyanoguinodimethane (F4TCNQ) co-crystal presents a segregated stacked packing, with a unitary degree of charge transfer. EPR temperature studies revealed that upon charge transfer the electron migrate through the stack from 18.6 Å at 5 K up to 19.42 Å at 300 K.

Co-crystals of Anthracene/ tetracyanoquinodimethane (TCNQ) have a mixed stacked packing, resulting in a localized spin with a unique long relaxation times. Here we present the results of our charge transfer co-crystals screening study, which resulted with four charge transfer co-crystals having mixed stack packing and long spin relaxation times: Tetramethylphenylenediamine (TMPD)/ tetracyanoguinodimethane (TCNQ), Naphthalene/ 1,2,4,5-Tetracyanobenzene (TCNB) and perylene/2,2'-Benzo[1,2-b:4,5-b']dithiophene-4,8diylidene-bis-propanedinitrile (DTTCNQ).



In this study we were able to determine the criteria for charge transfer cocrystals with long spin relaxation times. In addition, EPR study upon photoexcitation of Anthracene/TCNQ co-crystals showed the formation of spin polarized radical-pair spectrum. Its EPR phase pattern indicates it is a triplet born radical pair.



Information zum Vortrag erteilt: Prof. Dr. Georgeta Salvan

Tel.: 531 33137 Alle Zuhörer sind ab 15:15 Uhr zum Kaffee vor dem Hörsaal eingeladen.