



Chemical Sciences

Chemistry of Materials

Grants Overview 2010 - 2016

Annex to Factsheet

Reference date: August 2016



Netherlands Organisation for Scientific Research

Spinoza Prize Winners

2000 Prof. D. Frenkel (University of Cambridge) - Macromolecular Simulations

2001 Prof. E.W. Meijer (Eindhoven University of Technology) - Organic Chemistry

2015 Prof. R.A.J. Janssen (Eindhoven University of Technology) - Molecular Materials and Nanosystems

Grants Talent Scheme

2010

Veni		
Dr. A. Stradomska-Szymczak	Modeling excited state dynamics in large molecular aggregates	RUG
Dr. P. Nicu	Vibrational Circular Dichroism: Towards a reliable and versatile method for absolute configuration determination	VU
Dr. M. Kamperman	Bioinspired Dry Adhesives from Block Copolymers	WUR

Vidi		
Prof. dr. ir. J. van der Gucht	Tough and smart: physically cross-linked double polymer networks	WUR-AV
Dr. N.H. Katsonis	Nanostructured super-reflectors: learning lessons from scarab beetles	UT-MESA
Dr. M.A. Stöhr	From surface-supported supramolecular assemblies to covalently coupled nanostructures	RUG-WN
Prof. dr. J. Dik	Looking over the painter	TUD-WMTTM
Dr. H.M. Cuppen	Kinetics in Soft Molecular Layers - from interstellar ices to polymorph control	RU-NWI
Dr. D. Dubbeldam	Towards a blueprint for designing efficient structured mesoporous materials: Insight into adsorption and diffusion.	UVA-HIMS

Vici		
Prof. dr. E.P.A.M. Bakkers	Nanowire Growth	TUE-TN

2011

Veni		
Dr. A.A. Bakulin	Ultrafast spectroscopy linking molecular and device properties of organic solar cells	FOM-AMOLF
Dr. A.J. Cruz-Cabeza	From Molecules to Crystals: Understanding the Key Factors that Govern the Observation of Crystal Structures	UVA-HIMS
Dr. P.T.K. Chin	Multispectral nanomaterials for image guided surgery.	LUMC
Dr. I. Swart	Combining ultrasmall with ultrafast: STM with sub-nanosecond time resolution	UU-DINS
Dr. ir. M.A. van Huis	Atomic Scale Understanding of Cation Exchange in Nanocrystals	UU-DINS
Prof. dr. J. Oomens	The chemistry underlying novel peptide sequencing methods	RU-IMM

2012

Veni		
Dr. ir. M.M.J. Smulders	Multistimuli-responsive self-assembled polymer architectures	WUR-AV
Dr. ir. W.M. de Vos	Responsive polymer brushes as functional interfaces for bio-sensors, enzymatic catalysis and targeted drug delivery.	UT-TNW
Dr. K. Müller	Structural and electronic properties of organic charge-transfer complexes on metals and insulators	RUG-ZIAM
Dr. K.J.H. Giesbertz	Time-dependent one-body reduced density matrix functional theory for strong electron correlations	VU-EWSF

Vidi		
Prof. dr. S. Otto	Molecular Recognition and Self-Replication in Dissipative Molecular Networks	RUG-STRAT

2013

Veni		
Dr. W.L. Noorduin	A new route to complex micro-architectures	RU-NWISK
Vidi		
Dr. I.A.C. Infante	Modelling Surface Processes in Quantum Dot Solar Cells by First Principles	VU-EWSF
Dr. M.M.G. Kamperman	Sticky when wet: bioinspired nanostructured complex coacervate adhesives for wet environments	WUR-AV
Vici		
Prof. dr. K.U. Loos	Poly(vinylidene fluoride) containing (block) copolymers - Novel ways to piezoelectric nanofoams, magnetoelectrics and polymer film dielectrics	RUG-WN

2014

Veni		
Dr. W. Fu	Overcoming the Debye screening length with radiofrequency-operated graphene biosensors	
Dr. S.J. Wezenberg	Supramolecular detection and photodynamic control of substrate chirality	RUG-STRAT
Dr. H.B. Eral	SoftPharma: Functional soft matter for controlling polymorphism	UU-BWSK
Dr. L. Albertazzi	Design of Bio-active Supramolecular Polymers	TUE-ICMS
Vidi		
Dr. E. Otten	Contemporary alchemy: conferring noble-metal reactivity on cheap elements by ligand design	RUG
Dr. Ir. A. Petrigani	Shapes and sizes of hydrocarbons in space	UVA-HIMS
Dr. I.K. Voets	Supramolecular Colloidal Materials: towards programmable colloidal assembly for functional supramolecular materials	TUE-ICMS

2015

Veni		
Dr. P.W.J.M. Frederix	Shrinking protein-RNA conformational space with artificial intelligence	RUG
Dr. B. Seoane de la Cuesta	Towards design in porous architectures	TUD
Vidi		
Dr. ir. W.M. de Vos	Advanced membranes, made in water	UT
Dr. W.A. Smith	Light. Catalyst. ACTION!	TUD

2016

Veni		
Dr. T.E. Kodger	Squishy and smart: Designing biocompatible materials from the bottom up	WUR
Dr. A.L. Smith	A new approach for comprehensive modelling of the physico-chemical properties of fuel for molten salt reactors	TUD
Dr. ir. P.A. Korevaar	Synthetic micro-systems with life-like dynamics driven by molecular self-assembly	RU
Dr. B. Helmich-Paris	Predictive accuracy in computational spectroscopy of large molecules	VU

Grants TOP, TOP-PUNT and ECHO

2010 - 2011

TOP		
Prof. dr. G.J. Kroes	Towards accurate predictive calculations on reactions of molecules on metal surfaces	UL-LIC

ECHO		
Dr. O.V. Gritsenko	Novel density-matrix response functional theory to calculate molecular electronic excitations including double, bond breaking, and charge-transfer excitations	VU-EWSF
Prof. dr. W.J. Buma	Molecular Machines at Work in the Gas Phase	UVA-HIMS
Prof. dr. T.T.M. Palstra	Novel Spintronic Materials	RUG-WN
Prof. dr. S. Woutersen	Slippery when wet: How water lubricates molecular machines	UVA-HIMS
Prof. dr. C. Filippi	Novel tools for computational spectroscopy: The primary isomerisation in vision	UT-TNW
Prof. dr. W.K. Kegel	Colloidal Surfactants (and beyond).	UU-BWSK
Prof. dr. J.H. van Esch	Catalytic control over soft matter	TUD-TNWCE
Prof. dr. ir. M. Dijkstra	Understanding the origin of chirality in colloidal liquid crystals	UU-BWNS
Dr. A.W. Ehlers	Chiral pentaorganosilicates	VU-EWSF
Dr. P.C.M. Christianen	Enantioselection of supramolecular chirality by external fields	RU-IMM
Dr. B.H. Ern�	Water-Water Pickering Emulsions	UU-BWSK

2011 - 2012

ECHO		
Dr. C. de Mello Donega	Colloidal heteronanocrystals of earth-abundant and non-toxic compounds: new materials for tailoring and harvesting nanoscale excitons	UU-BWSK
Prof. dr. ir. H.S.J. van der Zant	Single-molecule electronic devices based on quantum interference effects	TUD-TNW
Prof. dr. W.L. Vos	Tunable light sources by positioning quantum dots in 3D photonic bandgap crystals with polymer brushes	UT-TNW
Prof. dr. P.E. de Jongh	Supported light-metal nanoparticles for N ₂ bond activation.	UU-DINS
Prof. dr. C. Filippi	Molecular underpinnings of super-resolution imaging: A first-principle computational study	UT-TNW
Prof. dr. H. Zuilhof	Throwing DARTs at a surface: Fast and quantitative analysis of organic surface reactions	WUR-AV
Prof. dr. ir. P.P.A.M. van der Schoot	Kinetic theory of structural transitions in supramolecular polymers	TUE-TN
Prof. dr. S. Harder	Molecular magnesium hydride and magnesium(I) clusters: from fundamental studies to application	RUG-WN

2012 - 2013

TOP		
Prof. dr. B.L. Feringa	Molecular Motors	RUG-STRAT
Prof. dr. D.H. Parker	Imaging Astrochemistry in the lab	RU-IMM
ECHO		
Prof. dr. D.A.M. Vanmaekelbergh	Nanoperiodic semiconductors from colloids that react as atoms	UU-BWSK
Prof. dr. W.J. Buma	Optically Amplified Vibrational Circular Dichroism:boosting the difference between left and right	UVA-HIMS
Prof. dr. M.A.G.J. Orrit	Magic wand: Enhancing single weak emitters in the near field of a gold nanorod	UL-WN
Prof. dr. ir. M. Dijkstra	Understanding critical Casimir forces between colloidal particles in near-critical solvent mixtures	UU-BWNS
Dr. A. Imhof	Heads or Tails? Colloidal rods with graded surface chemistry	UU-DINS
Dr. I. Swart	Single atom analytics: chemical identification of single atoms and functional groups in molecules	UU-BW
Dr. P. Gori-Giorgi	The strictly-correlated-electrons approach at work for Chemistry: Density Functionals for transition metals and accurate excitation energies	VU-EWSF
Dr. I.K. Voets	Supramolecular Colloids: multivalent particles with switchable and orthogonally selective 'sticky' interactions	TUE-ST
Prof. dr. A.H. Velders	Multivalent Orthogonal Nanoparticle Aggregates Ligand Induced Self-(dis)Assembly (MONALISA)	WUR-AV

2013 - 2014

TOP-PUNT		
Prof. dr. E.W. Meijer	Polymers in motion	TUE
ECHO		
Dr. C. de Mello Donega	Ultrathin Colloidal Nanosheets of Metal Chalcogenides: New Materials for 2D Excitons and Plasmons	UU-DINS
Dr. A.V. Petukhov	Chiral colloids	UU-BWSK
Dr. R.J. de Vries	An artificial virus replicating in a cellular host: orthogonal self-assembly in complex biomolecular mixtures	WUR-AV
Dr. H.M. Cuppen	Energy Dissipation and its Effect on the Local Environment	RU-IMM
Prof. dr. L.D.A. Siebbeles	Influence of nanocrystal shape on dynamics of charges and trions	TUD-TNWCE
Prof. dr. A.M. Brouwer	In touch with fluorescent probe molecules: microscopic visualization of contacts and friction	UVA-HIMS
Dr. ir. T.J. Savenije	Revealing charge carrier generation and transport in organometal halide perovskites: Towards rational design of optoelectronic materials	TUD-TNWCE
Dr. R.E. Kieltyka	Applying autonomous biomolecular cascade reactions to synthesize novel hybrid nucleic acid-graft copolymeric materials	UL-LIC
Dr. C. Fonseca Guerra	Computational Design of Supramolecular Self-Assembling Materials based on a Condensed-Phase Molecular Orbital Theory	VU-EWSF

2015

TOP

Prof. dr. ir. J. Huskens	Multivalent interactions at the sweet spot	UT
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TOP-PUNT

Prof. dr. D.A.M. Vanmaekelbergh	Superficial Superstructures: Control of Colloidal Ordering at Interfaces	UU
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ECHO

Dr. S.Y.T. van de Meerakker	Cold and controlled chemistry: chemical reactions under the microscope	RU
Prof. dr. L. Visscher	Exciting relativistic molecules	VU
Dr. A.V. Petukhov	Colloidal self-propelled rotators	UU
Dr. ir. G. Koster	Getting oxide nanosheets in line: towards epitaxial substrates	UT
Prof. dr. P.E. de Jongh	Nanoconfined complex metal hydrides as fast ion conductors for all-solid-state batteries	UU

2016

TOP

Prof. dr. E.P.A.M. Bakkers	Hybrid Core/Shell Nanowires	TUE
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TOP-PUNT

Prof. dr. B. Noheda	Searching for the 'Silicon' of Piezoelectrics: Morphotropic Quartz	RUG
Prof. dr. N.A.J.M. Sommerdijk	Bio-inspired Hybrids (Bi-Hy)	TUE

ECHO

Prof. dr. ir. J. van der Gucht	Illuminating complex self-assembly with molecular force sensors	WUR
Dr. I.K. Voets	Ice-binding protein-polymers for control over ice growth in soft materials (POLICE)	TUE

Reference date: 1 September 2016. The 2016 round TOPIECHO based on continuous applications.

Gravitation Programme

2012

Research Centre for Functional Molecular Systems

Prof. dr. E.W. Meijer, Prof. dr. B.L. Feringa, Prof. dr. ir. R.A.J. Janssen, Prof. dr. R.J.M. Nolte, Prof. dr. ir. J.C.M. van Hest, Prof. dr. S. Otto

Grants International Thematic Programmes

2011

ChemThem: Out-of-equilibrium self assembly		
Prof. dr. E.W. Meijer	Controlled Reaction-Diffusion in Self-Assembled Systems	TUE-ICMS
Prof. dr. A. Herrmann	Complex Functions in Colloidal Vesicle Systems Mediated by DNA	RUG-WN
Prof. dr. S. Otto	Out-of-Equilibrium Assembly of Dynamic Combinatorial Hydrogels	RUG-STRAT
Dr. ir. J.H.B. Sprakel	Colloidal LEGO with peptides	WUR-AV
Prof. dr. G.J. Vancso	Crosslinking polymer microparticles in non-equilibrium with light: Redox-active designer hydrogels for low-cost lab-on-paper diagnostics	UT-TNW

2012

Cooperation India - Functional Materials		
Prof. dr. ir. B.J. van Wees	Graphene Spintronics with Complex Oxides	RUG-WN
Prof. dr. E.J.M. Hensen	Design of novel bifunctional gold-Ti- and Fe-modified zeolite functional materials for the catalytic oxidation of hydrocarbons	TUE-ST
Prof. dr. R.P. Sijbesma	Functional nanoporous membranes based on liquid crystalline and hyperbranched polymers	TUE-ST

2016

Cooperation China - Advanced Materials		
Prof. dr. A.P.H.J. Schenning	Device Integrated Smart Infrared Reflective Polymer Materials for Energy Management	TUE
Prof. dr. ir. J.R. van Ommen	Enhanced performance of luminescent phosphor particles due to surface functionalization by Atomic Layer Deposition in a Fluidized Bed reactor	TUD
Dr. G. Ye	Utilization of regional wastes and industrial residuals for producing high value building materials through alkali-activation technology	TUD
Dr. N.R. Shiju	Developing novel catalytic materials for converting CO ₂ , methane and ethane to high-value chemicals in a hybrid plasma-catalytic reactor	UVA
Prof. dr. ir. J.C.M. van Hest	Shaped for success: designing the optimal morphology of biodegradable polymersomes for applications in nanomedicine	RU
Dr. M.E. Aubin-Tam	Autonomous bioproduction of high-performance biomimetic structural materials by re-engineered bacteria	TUD

M-Era.net (materials)		
Prof. dr. A. Kros	Designed nanostructured bioactive surfaces for precision medicines (MediSURF)	UL
Prof. dr. H.J.M. Bouwmeester	Designing rules for enhancing SURface KINetics in functional OXides for clean energy technologies (SURKINOX)	UT
Prof. dr. ir. J.R. van Ommen	Cost-effective Atomic Layer Deposition Processes for Large Area Coating Applications – ERA-NET (CALDERA)	TUD
Dr. ir. J.M.C. Mol	Corrosion inhibitor and dealloying descriptors (COIN DESC)	TUD

Grants Public-Private Cooperation

TA		
Prof. dr. W.J. Buma	Development of a Vibrational Optical Activity analysis toolbox: from chiroptical spectra to molecular stereochemistry and conformation	UvA
Private partners: BioTools Inc., Scientific Computing & Modelling		
Dr. I.K. Voets	PUSYNSTAB	TUE
Private partners: DSM Coating Resins, SyMo-Chem		
Prof. dr. A.P.M. Kentgens	Localized Spectroscopy of Polymers by Solid-State NMR	RU
Private partners: DSM Resolve, Spinnovation Analytical, Teijin Aramid, Philips Medical Systems Nederland, NovioTech		
Prof. dr. J. van Duynhoven	Diffusional NANoprobes for Multi-length Scale material CHaracterisation (DINAMISCH)	WUR
Private partners: SyMo-Chem, Unilever R&D Vlaardingen		
Prof. dr. ir. N.E. Benes	Hypercrosslinked nanoscale-hybrid membranes for solvent nanofiltration	UT
Private partner: ISPT		

TA (PTA) NEWPOL		
Private partner: Dutch Polymer Institute		
Dr. ir. J.H.B. Sprakel	Photonic supralattices for pigment	WUR
Prof. dr. A.P.H.J. Schenning	Responsive Commodity Polymers	TUE
Prof. dr. E.W. Meijer	Supramolecular Biomaterials with a Dual Network Architecture for Stem	TUE
Prof. dr. S. Otto	Self-Synthesizing Hydrogels	RUG
Dr. P.Y.W. Dankers	Supramolecular Biomaterials with Antimicrobial and Regenerative	TUE
Dr. ir. M.A. van der Veen	Towards flexible memories with coordination polymers with polar	TUD

LIFT		
Prof. dr. H. Zuilhof	Antifouling coatings based on zwitterionic dendrimers	WUR
Private partner: Surfex		
Prof. dr. ir. J.C.M. van Hest	POX-Patch: a versatile, poly(2-oxazoline)-based haemostat	RU
Private partner: GATT Technologies		
Prof. dr. F. Picchioni	Thermally reversible polymers for digital printing	RUG
Private partner: Océ Technologies		
Dr. ir. W.M. de Vos	Asymmetric Polyelectrolyte Multilayer Membranes for micro-pollutant removal	UT
Private partner: NX Filtration en Oasen		

KIEM		
Dr. L.B.F. Juurlink	Kwaliteitsbepaling van een gekromd eenkristallijn zacht metalen oppervlak	UL
Private partner: Surface Preparation Laboratory		
Prof. dr. L.W. Jenneskens	Adsorption of metal cations from solution with carbon-supported iron(oxide) nanoparticles	UU
Private partner: Geochem Research		
Dr. J. Prakash	Stabilisation of nanoparticles and quantification of polymeric building blocks (SNAP)	UT
Private partner: Cristal Therapeutics		
Dr. L.B.F. Juurlink	A comparison of curved and flat cobalt polished surfaces: surface quality and influence of polishing direction	UL
Private partner: Surface Preparation Laboratory		
Dr. ir. B.A.J. Noordover	Opfrissen van 3D-print afval	TUE
Private partner: 3DPPM		
Dr. A.F.J. Ram	Ontwikkeling van duurzame piepschuimvervanger op basis van organische vezels en schimmeldraden	LEI
Private partner: Generation of Change		
Dr. ir. M.M.J. Smulders	Gecontroleerde groei van niet-vervuilende coatings onder invloed van zichtbaar licht	WUR
Private partner: Surfix		
Dr. M. Tromp	Operando XAS measurements of a novel Iron electrode for low-cost energy storage	UVA
Private partner: E-Stone Batteries		

Advanced Research Center (ARC)

Advanced Research Center for Chemical Building Blocks (ARC CBBC)

Participants: Dutch universities and research institutes
 Founders: RUG, UU, TU/e (research hubs), AkzoNobel, Shell, BASF, NWO, Ministry of Economic Affairs, Topsector Chemistry