

**Our experience with
applying, getting granted, and coordinating the
«Pickfood» MSCA researcher training network.**

Prof. Jon Otto Fossum, NTNU

«Pickfood» stands for «Pickering emulsions for food applications»

History of MSCA applications

First attempt 2012, not granted

DropEm

“Tailored Droplets for Designed Emulsion Control”

Proposal Submission Forms

EUROPEAN COMMISSION
7th Framework Programme for
Research, technological
Development and Demonstration

Marie Curie Actions

A1: Summary

Proposal Number	607509	Proposal Acronym	DropEm
Proposal Title	DropEm		
Call Identifier	FP7-PEOPLE-2013-ITN	Marie Curie Action Code	ITN
Scientific Panel	PHY	Duration in months	48
Type of Network	Multi-partner ITN (ITN)		

B.1 LIST OF PARTICIPANTS


Partnership	Private Sector Participant ✓	Country	Legal Entity Name	Department / Division / Laboratory	Scientist-in-Charge	Role of Associated Partner ¹
Full Participant (Beneficiaries)						
1- NTNU		Norway	NTNU	Physics: Soft and Complex Matter Physics	Jon Otto Fossum	
2- ESPCI		France	ESPCI-ParisTech	Gulliver: Microfluidics	Olivier Dauchot	
3- Univ. Amsterdam		Netherlands	Univ. Amsterdam	Soft Matter Physics	Daniel Bonn	
4- IFE		Norway	IFE	Physics	Geir Helgesen	
5- Univ. Oslo		Norway	Univ. Oslo	Physics	Tom Henning Johansen	
6- Univ. Paris 7		France	Univ. Paris 7	Soft and Complex Matter (MSC)	Paul Dommersens	
7- Univ. Bristol		UK	Univ. Bristol	Mathematics	Jens Eggers	
8- Unilever	✓	Netherlands	Unilever	Structured Material and Process Science	Krassimir Velikov	
Associated Partners						
1- Univ. Copenhagen		Denmark	Univ. Copenhagen	Physics	Heloisa Bordallo	TC,HS
2- Max IV Lab.		Sweden	Lund. Univ. Max IV Lab.	Max IV Lab.	Tomas Plivelic	TC,HS
3- Shell	✓	Netherlands	Shell	Fluid Flow & Reactor Engineering	Lourens Post	TC,HS
4- Total	✓	France	Total	Petrochemicals	Nicolas Passade-Boupat	HS
5- Bertin	✓	France	Bertin Technologies	Biotech and Healthcare Systems	Karine Bizet	HS
6- CondAlign	✓	Norway	CondAlign	-	Matti Knaapila	TC,HS
7- GiaMag	✓	Norway	GiaMag Technologies	-	Arne Skjeltop	TC,HS
8- PUC-Rio		Brazil	Pontificia Universidade Catolica Rio de Janeiro	Mechanical Engineering	Marcio Carvalho	HS
9- Univ. Indiana		USA	Univ. Indiana	Physics	Roger Pynn	HS
10- UCSB		USA	University of California Santa Barbara	Physics and Materials	Philip Pincus	HS

Data for SME participants:

SME name	Location (city/country)	Type of R&D activities	No. of full-time employees	No. of full-time employees in R&D	Annual turnover (approx. in Euro)
CondAlign	Kjeller/Norway	Nano-composites	2.5	1.5	200000
GiaMag Technologies	Kjeller/Norway	Magnetic particle/drop manipulation	1.5	1.5	100000

¹ Delivering specialised training courses (TC), hosting secondments (HS).

2014

Proposal Evaluation Form		
	EUROPEAN COMMISSION Horizon 2020 - Research and Innovation Framework Programme	Evaluation Summary Report

Call: H2020-MSCA-ITN-2014
Funding scheme: Training Networks
Proposal number: 642762
Proposal acronym: DROPEM
Duration (months): 48
Proposal title: Drops and Physical Emulsions
Activity: PHY

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGEUNIVERSITET NTNU	NO	572,550	14.40%	0	-
2	UNIVERSITEIT VAN AMSTERDAM	NL	766,123	19.27%	0	-
3	REGIE ECOLE SUPERIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLE	FR	525,751	13.22%	0	-
4	UNILEVER RESEARCH AND DEVELOPMENT VLAARDINGEN BV	NL	510,749	12.84%	0	-
5	Giamag Technologies	NO	286,275	7.20%	0	-
6	Microfactory SAS	FR	262,876	6.61%	0	-
7	MINISTERIE VAN ONDERWIJS, CULTUUR EN WETENSCHAP	NL	255,374	6.42%	0	-
8	INSTITUTT FOR ENERGITEKNIKK	NO	286,275	7.20%	0	-
9	UNIVERSITE PARIS DIDEROT - PARIS 7	FR	262,876	6.61%	0	-
10	UNIVERSITAT DE BARCELONA	ES	247,873	6.23%	0	-
	Total:		3,976,722		0	

Evaluation Result

Total score: 73.20% (Threshold: 70/100.00)

Proposal Evaluation Form



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation Summary Report

2016

Call: H2020-MSCA-ITN-2015
Funding scheme: Training Networks
Proposal number: 676460
Proposal acronym: MESOARC
Duration (months): 48
Proposal title: Meso-structured materials for responsive architecture and design
Activity: MSCA-ITN-ETN: ENG

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	572,550	14.28%	572,550	14.28%
2	THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE	UK	546,575	13.63%	546,575	13.63%
3	NOVA ID FCT - ASSOCIACAO PARA A INNOVACAO E ESENVOLVIMENTO DA FCT	PT	476,712	11.89%	476,712	11.89%
4	REGIE ECOLE SUPERIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLE	FR	525,751	13.11%	525,751	13.11%
5	UNIVERSITEIT VAN AMSTERDAM	NL	510,748	12.74%	510,748	12.74%
6	INSTITUTT FOR ENERGITEKNIKK	NO	572,550	14.28%	572,550	14.28%
7	MINISTERIE VAN ONDERWIJS, CULTUUR EN WETENSCHAP	NL	255,374	6.37%	255,374	6.37%
8	Giamag Technologies	NO	286,275	7.14%	286,275	7.14%
9	Microfactory SAS	FR	262,875	6.56%	262,875	6.56%
	Total:		4,009,410		4,009,410	

Evaluation Summary Report

Evaluation Result

Total score: 68.00% (Threshold: 70/100.00)

Proposal Evaluation Form



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

**Evaluation
Summary Report**

2015

Call: H2020-MSCA-ITN-2016
Funding scheme: MSCA-ITN-ETN
Proposal number: 722847
Proposal acronym: ClaySFT
Duration (months): 48
Proposal title: Clay Science for Future Technologies
Activity: MSCA-ITN-ETN: PHY

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	572,550	14.32%	572,550	14.32%
2	INSTITUTT FOR ENERGITEKNIKK	NO	286,275	7.16%	286,275	7.16%
3	Giamag Technologies	NO	286,275	7.16%	286,275	7.16%
4	INTERNATIONAL RESEARCH INSTITUTE OFSTAVANGER AS	NO	286,275	7.16%	286,275	7.16%
5	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE	FR	1,051,502	26.30%	1,051,502	26.30%
6	REGIE ECOLE SUPERIEURE DE PHYSIQUE ET DE CHIMIE INDUSTRIELLE	FR	262,876	6.58%	262,876	6.58%
7	UNIVERSITAET BAYREUTH	DE	498,433	12.47%	498,433	12.47%
8	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS	ES	495,746	12.40%	495,746	12.40%
9	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	258,061	6.45%	258,061	6.45%
	Total:		3,997,994		3,997,994	

Evaluation Summary Report

Evaluation Result

Total score: 84.80% (Threshold: 70/100.00)

Proposal Evaluation Form



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation Summary Report

2017

Call: H2020-MSCA-ITN-2017
Funding scheme: MSCA-ITN-ETN
Proposal number: 765499
Proposal acronym: ClaySFT
Duration (months): 48
Proposal title: Clay Science for Future Technologies
Activity: MSCA-ITN-ETN: PHY

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	572,550.48	14.34%	572,550.48	14.34%
2	INSTITUTT FOR ENERGITEKNIKK	NO	286,275.24	7.17%	286,275.24	7.17%
3	INTERNATIONAL RESEARCH INSTITUTE OFSTAVANGER AS	NO	286,275.24	7.17%	286,275.24	7.17%
4	KOBENHAVNS UNIVERSITET	DK	290,081.88	7.26%	290,081.88	7.26%
5	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	1,314,378	32.91%	1,314,378	32.91%
6	UNIVERSITAET BAYREUTH	DE	747,649.44	18.72%	747,649.44	18.72%
7	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	258,061.32	6.46%	258,061.32	6.46%
8	NOVA ID FCT - ASSOCIACAO PARA A INOVACAO E DESENVOLVIMENTO DA FCT	PT	238,356.36	5.97%	238,356.36	5.97%
	Total:		3,993,627.96		3,993,627.96	


Evaluation Result

Total score: 88.80% (Threshold: 70/100.00)

2018

Proposal Evaluation Form

Associated with document Ref. Ares(2018)2421877 - 07/05/2018

	EUROPEAN COMMISSION Horizon 2020 - Research and Innovation Framework Programme	Evaluation Summary Report
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Call: H2020-MSCA-ITN-2018
Funding scheme: MSCA-ITN-ETN
Proposal number: 813988
Proposal acronym: ClaySFT
Duration (months): 48
Proposal title: Clay Science for Future Technologies
Activity: MSCA-ITN-ETN: PHY

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	14.13%	584,684.64	14.13%
2	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	1,099,208.16	26.56%	1,099,208.16	26.56%
3	UNIVERSITAET BAYREUTH	DE	505,576.8	12.22%	505,576.8	12.22%
4	KOBENHAVNS UNIVERSITET	DK	595,044	14.38%	595,044	14.38%
5	INTERNATIONAL RESEARCH INSTITUTE OFSTAVANGER AS	NO	292,342.32	7.06%	292,342.32	7.06%
6	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	261,499.68	6.32%	261,499.68	6.32%
7	AALTO-KORKEAKOULUSAATIO	FI	280,805.76	6.78%	280,805.76	6.78%
8	UNIVERSIDADE NOVA DE LISBOA	PT	237,720.24	5.74%	237,720.24	5.74%
9	SVENSK KARNBRANSLEHANTERING AKTIEBOLAG	SE	281,982.96	6.81%	281,982.96	6.81%
10	ALTANA AKTIENGESELLSCHAFT	DE	0	0.00%	0	0.00%
11	Byk Chemie GmbH	DE	0	0.00%	0	0.00%
12	LAFARGE CENTRE DE RECHERCHE SAS	FR	0	0.00%	0	0.00%
13	INSTITUT DE RADIOPROTECTION ET DE SURETE NUCLEAIRE	FR	0	0.00%	0	0.00%
14	AGENCE NATIONALE POUR LA GESTION DES DECHETS RADIOACTIFS	FR	0	0.00%	0	0.00%
15	CondAlign AS	NO	0	0.00%	0	0.00%
16	Giamag Technologies	NO	0	0.00%	0	0.00%
17	LVMH RECHERCHE	FR	0	0.00%	0	0.00%
18	UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA	IT	0	0.00%	0	0.00%
19	THE UNIVERSITY OF MANCHESTER	UK	0	0.00%	0	0.00%
20	MASSACHUSETTS INSTITUTE OF TECHNOLOGY	US	0	0.00%	0	0.00%
	Total:		4,138,864.56		4,138,864.56	

Evaluation Result

Total score: 87.00% (Threshold: 70/100.00)

2018

Proposal Evaluation Form

Associated with document Ref. Ares(2018)2416389 - 07/05/2018



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation Summary Report

Call: H2020-MSCA-ITN-2018
Funding scheme: MSCA-ITN-ETN
Proposal number: 812891
Proposal acronym: PICKFOOD
Duration (months): 48
Proposal title: Pickering emulsions for food applications
Activity: MSCA-ITN-ETN: CHE

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	DANMARKS TEKNISKE UNIVERSITET	DK	595,044	14.18%	595,044	14.18%
2	KOBENHAVNS UNIVERSITET	DK	297,522	7.09%	297,522	7.09%
3	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	13.94%	584,684.64	13.94%
4	INSTITUTT FOR ENERGITEKNIKK	NO	292,342.32	6.97%	292,342.32	6.97%
5	UPPSALA UNIVERSITET	SE	281,982.96	6.72%	281,982.96	6.72%
6	CHALMERS TEKNISKA HOEGSKOLA AB	SE	281,982.96	6.72%	281,982.96	6.72%
7	WAGENINGEN UNIVERSITY	NL	531,239.76	12.66%	531,239.76	12.66%
8	THE UNIVERSITY OF BIRMINGHAM	UK	303,172.56	7.23%	303,172.56	7.23%
9	Bether Encapsulates BV	NL	0	0.00%	0	0.00%
10	UNIVERSITEIT VAN AMSTERDAM	NL	265,619.88	6.33%	265,619.88	6.33%
11	AALTO-KORKEAKOULUSAATIO	FI	280,805.76	6.69%	280,805.76	6.69%
12	Giamag Technologies	NO	0	0.00%	0	0.00%
13	KEEP-IT TECHNOLOGIES AS	NO	0	0.00%	0	0.00%
14	Stayfit Nutrisupplies Company Limited	TZ	215,588.88	5.14%	215,588.88	5.14%
15	UNILEVER RESEARCH AND DEVELOPMENT VLAARDINGEN BV	NL	265,619.88	6.33%	265,619.88	6.33%
16	BIOINICIA SL	ES	0	0.00%	0	0.00%
17	AGENCIA ESTATAL CONSEJO SUPERIOR DEINVESTIGACIONES CIENTIFICAS	ES	0	0.00%	0	0.00%
18	North Carolina State University	US	0	0.00%	0	0.00%
19	Fødevarestyrelsen	DK	0	0.00%	0	0.00%
20	BASF SE	DE	0	0.00%	0	0.00%
	Total:		4,195,605.6		4,195,605.6	

Evaluation Result

Total score: 80.00% (Threshold: 70/100.00)

2019

Proposal Evaluation Form

Associated with document Ref. Ares(2019)2866038 - 29/04/2019



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation
Summary Report

Call: H2020-MSCA-ITN-2019
Type of action: MSCA-ITN-ETN
Proposal number: 860992
Proposal acronym: ClaySFT
Duration (months): 48
Proposal title: Clay Science for Future Technologies
Activity: MSCA-ITN-ETN: PHY

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	14.16%	584,684.64	14.16%
2	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	824,406.12	19.96%	824,406.12	19.96%
3	UNIVERSITAET BAYREUTH	DE	505,576.8	12.24%	505,576.8	12.24%
4	KOBENHAVNS UNIVERSITET	DK	595,044	14.41%	595,044	14.41%
5	NORCE NORWEGIAN RESEARCH CENTRE AS	NO	292,342.32	7.08%	292,342.32	7.08%
6	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	261,499.68	6.33%	261,499.68	6.33%
7	AALTO KORKEAKOULUSAATIO SR	FI	280,805.76	6.80%	280,805.76	6.80%
8	UNIVERSIDADE NOVA DE LISBOA	PT	237,720.24	5.76%	237,720.24	5.76%
9	SVENSK KARNBRANSLEHANTERING AKTIEBOLAG	SE	281,982.96	6.83%	281,982.96	6.83%
10	RIJKSUNIVERSITEIT GRONINGEN	NL	265,619.88	6.43%	265,619.88	6.43%
	Total:		4,129,682.4		4,129,682.4	

Evaluation Summary Report

Evaluation Result

Total score: 85.00% (Threshold: 70/100.00)

2019

Proposal Evaluation Form

Associated with document Ref. Ares(2019)2868141 - 29/04/2019



EUROPEAN COMMISSION

Horizon 2020 - Research and Innovation Framework Programme

Evaluation Summary Report


Call: H2020-MSCA-ITN-2019
Type of action: MSCA-ITN-ETN
Proposal number: 860483
Proposal acronym: PICKFOOD
Duration (months): 48
Proposal title: Pickering emulsions for food applications
Activity: MSCA-ITN-ETN: CHE

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	DANMARKS TEKNISKE UNIVERSITET	DK	595,044	14.18%	595,044	14.18%
2	KOBENHAVNS UNIVERSITET	DK	297,522	7.09%	297,522	7.09%
3	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	13.94%	584,684.64	13.94%
4	INSTITUTT FOR ENERGITEKNIKK	NO	292,342.32	6.97%	292,342.32	6.97%
5	UPPSALA UNIVERSITET	SE	281,982.96	6.72%	281,982.96	6.72%
6	CHALMERS TEKNISKA HOEGSKOLA AB	SE	281,982.96	6.72%	281,982.96	6.72%
7	WAGENINGEN UNIVERSITY	NL	531,239.76	12.66%	531,239.76	12.66%
8	THE UNIVERSITY OF BIRMINGHAM	UK	303,172.56	7.23%	303,172.56	7.23%
9	UNIVERSITEIT VAN AMSTERDAM	NL	265,619.88	6.33%	265,619.88	6.33%
10	AALTO KORKEAKOULUSAATIO SR	FI	280,805.76	6.69%	280,805.76	6.69%
11	Stayfit Nutrisupplies Company Limited	TZ	215,588.88	5.14%	215,588.88	5.14%
12	UNILEVER RESEARCH AND DEVELOPMENT VLAARDINGEN BV	NL	265,619.88	6.33%	265,619.88	6.33%
	Total:		4,195,605.6		4,195,605.6	

Evaluation Result

Total score: 84.20% (Threshold: 70/100.00)

2020


Proposal Evaluation Form						
	EUROPEAN COMMISSION Horizon 2020 - Research and Innovation Framework Programme				Evaluation Summary Report	
Call:	H2020-MSCA-ITN-2020					
Type of action:	MSCA-ITN-ETN					
Proposal number:	956350					
Proposal acronym:	ClaySFT					
Duration (months):	48					
Proposal title:	Clay Science for Future Technologies					
Activity:	MSCA-ITN-ETN: PHY					
N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	14.27%	584,684.64	14.27%
2	UNIVERSITAET BAYREUTH	DE	505,576.8	12.34%	505,576.8	12.34%
3	RIJKSUNIVERSITEIT GRONINGEN	NL	531,239.76	12.96%	531,239.76	12.96%
4	CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE CNRS	FR	824,406.12	20.12%	824,406.12	20.12%
5	KOBENHAVNS UNIVERSITET	DK	297,522	7.26%	297,522	7.26%
6	NORCE NORWEGIAN RESEARCH CENTRE AS	NO	292,342.32	7.13%	292,342.32	7.13%
7	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	261,499.68	6.38%	261,499.68	6.38%
8	AALTO KORKEAKOULUSAATIO SR	FI	280,805.76	6.85%	280,805.76	6.85%
9	UNIVERSIDADE NOVA DE LISBOA	PT	237,720.24	5.80%	237,720.24	5.80%
10	SVENSK KARNBRANSLEHANTERING AKTIEBOLAG	SE	281,982.96	6.88%	281,982.96	6.88%
	Total:		4,097,780.28		4,097,780.28	

Abstract:

Evaluation Result

Total score: 88.60% (Threshold: 70/100.00)

2020

Proposal Evaluation Form		
	EUROPEAN COMMISSION Horizon 2020 - Research and Innovation Framework Programme	Evaluation Summary Report

Call: H2020-MSCA-ITN-2020
Type of action: MSCA-ITN-ETN
Proposal number: 956248
Proposal acronym: PICKFOOD
Duration (months): 48
Proposal title: Pickering emulsions for food applications
Activity: MSCA-ITN-ETN: CHE

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	DANMARKS TEKNISKE UNIVERSITET	DK	595,044	14.18%	595,044	14.18%
2	KOBENHAVNS UNIVERSITET	DK	297,522	7.09%	297,522	7.09%
3	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	13.94%	584,684.64	13.94%
4	INSTITUTT FOR ENERGITEKNIKK	NO	292,342.32	6.97%	292,342.32	6.97%
5	UPPSALA UNIVERSITET	SE	281,982.96	6.72%	281,982.96	6.72%
6	CHALMERS TEKNISKA HOEGSKOLA AB	SE	281,982.96	6.72%	281,982.96	6.72%
7	WAGENINGEN UNIVERSITY	NL	531,239.76	12.66%	531,239.76	12.66%
8	THE UNIVERSITY OF BIRMINGHAM	UK	303,172.56	7.23%	303,172.56	7.23%
9	UNIVERSITEIT VAN AMSTERDAM	NL	265,619.88	6.33%	265,619.88	6.33%
10	AALTO KORKEAKOULUSAATIO SR	FI	280,805.76	6.69%	280,805.76	6.69%
11	Stayfit Nutrisupplies Company Limited	TZ	215,588.88	5.14%	215,588.88	5.14%
12	UNILEVER INNOVATION CENTRE WAGENINGEN BV	NL	265,619.88	6.33%	265,619.88	6.33%
	Total:		4,195,605.6		4,195,605.6	

Evaluation Result

Total score: 94.00% (Threshold: 70/100.00)



Adobe Stock | #116734138

“Let’s follow the Three P’s: Patience, Persistence and Pizza.”

Building Networks



Getting granted

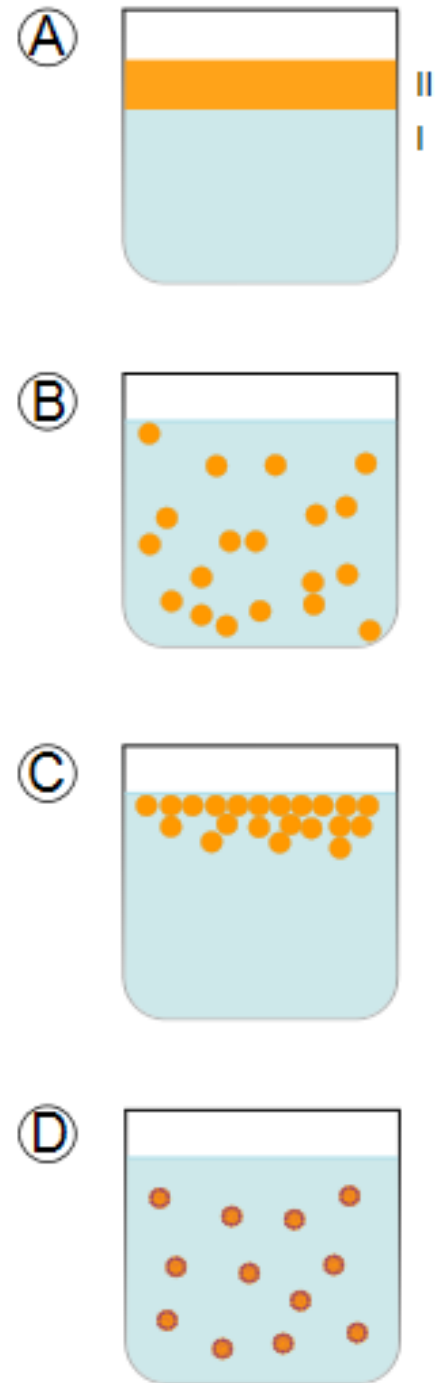
«Pickfood» stands for «Pickering emulsions for food applications»

Disciplines:

Food science and industry

Soft matter physics and chemistry

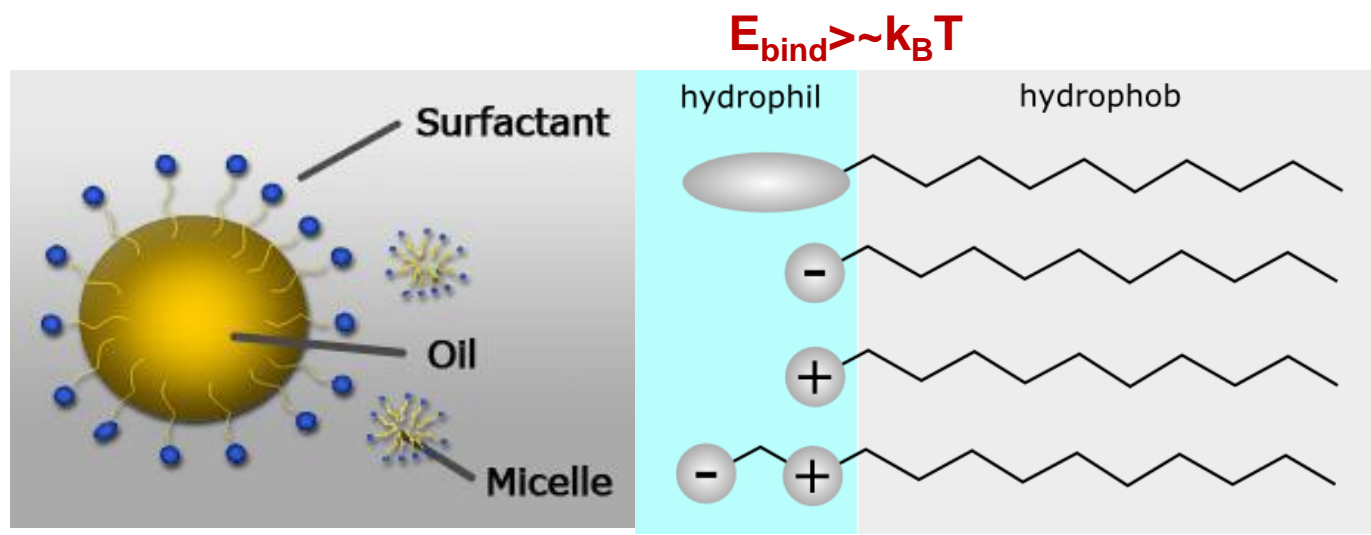
«Classical» («chemical») emulsions



Legend

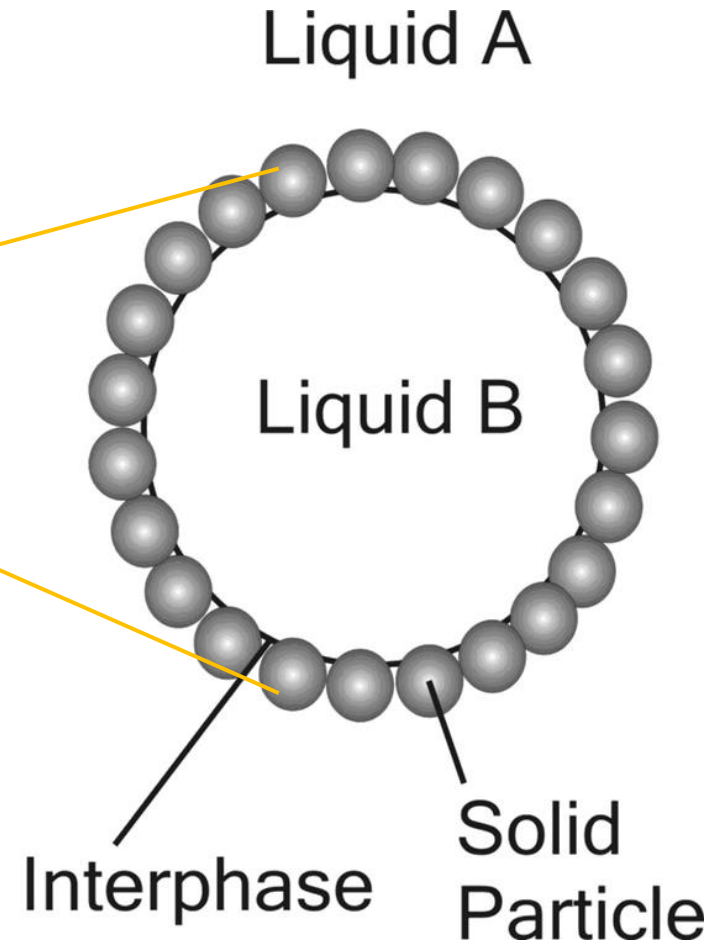
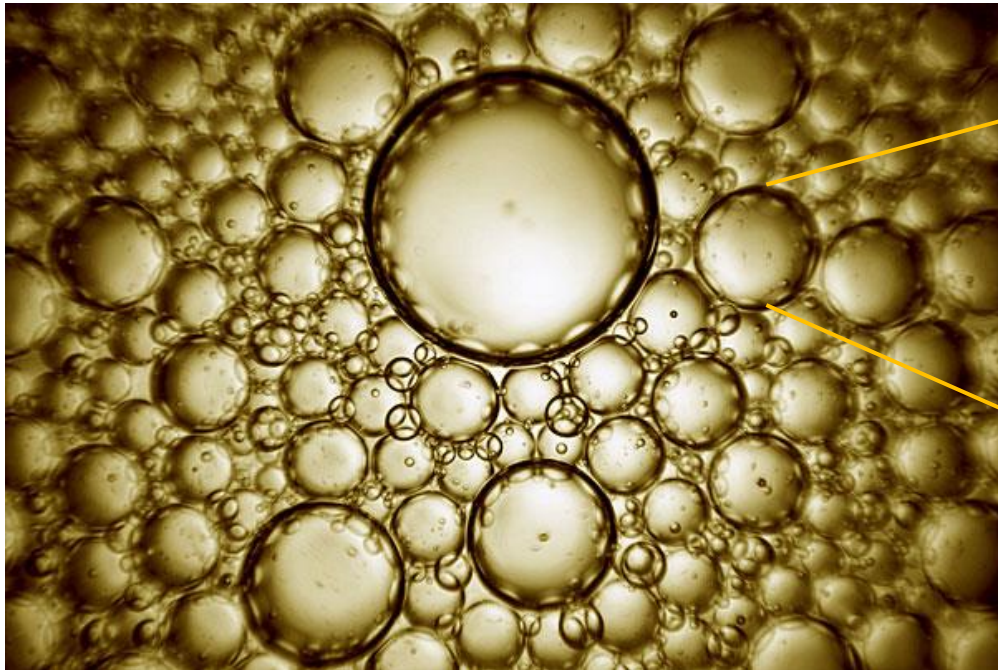
- Phase I
- Phase II
- Surfactant

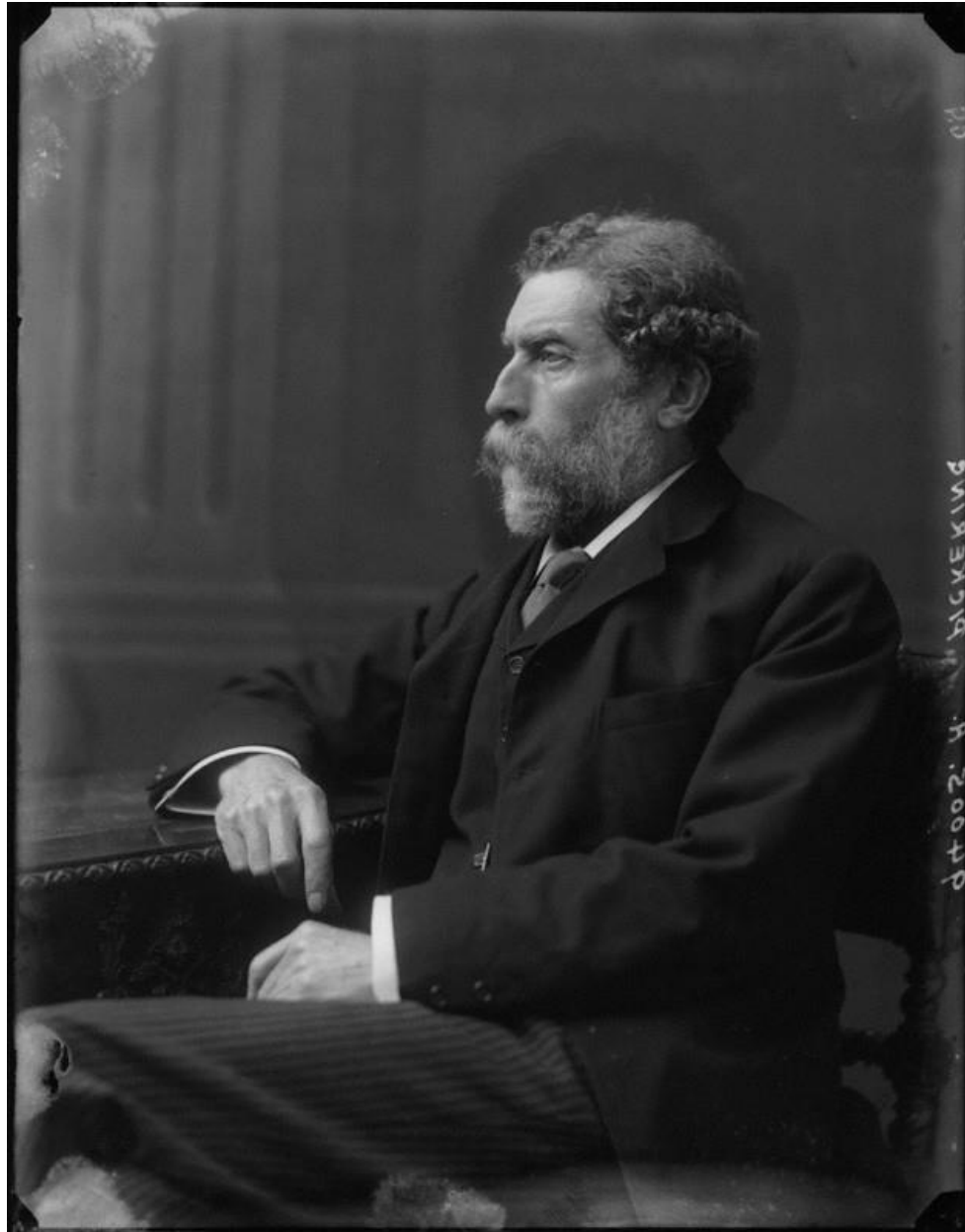
A. Two immiscible liquids, not emulsified
 B. Emulsion of Phase II dispersed in Phase I
 C. The unstable emulsion progressively separates
 D. Surfactant positions itself on interface between Phases I and II, stabilizing emulsion



«Classical» («chemical») emulsions

Pickering («physical») emulsions





“Separation of Solids in the Surface-layers of Solutions and ‘Suspensions’ (Observations on Surface-membranes, Bubbles, Emulsions, and Mechanical Coagulation). — Preliminary Account.” By W. RAMSDEN, M.A., M.D., Oxon., Fellow of Pembroke College, Oxford. Communicated by Professor F. GOTCH, F.R.S. Received June 8,—Read June 18, 1903.

J. Chem. Soc., Trans., 1907,91, 2001-2021

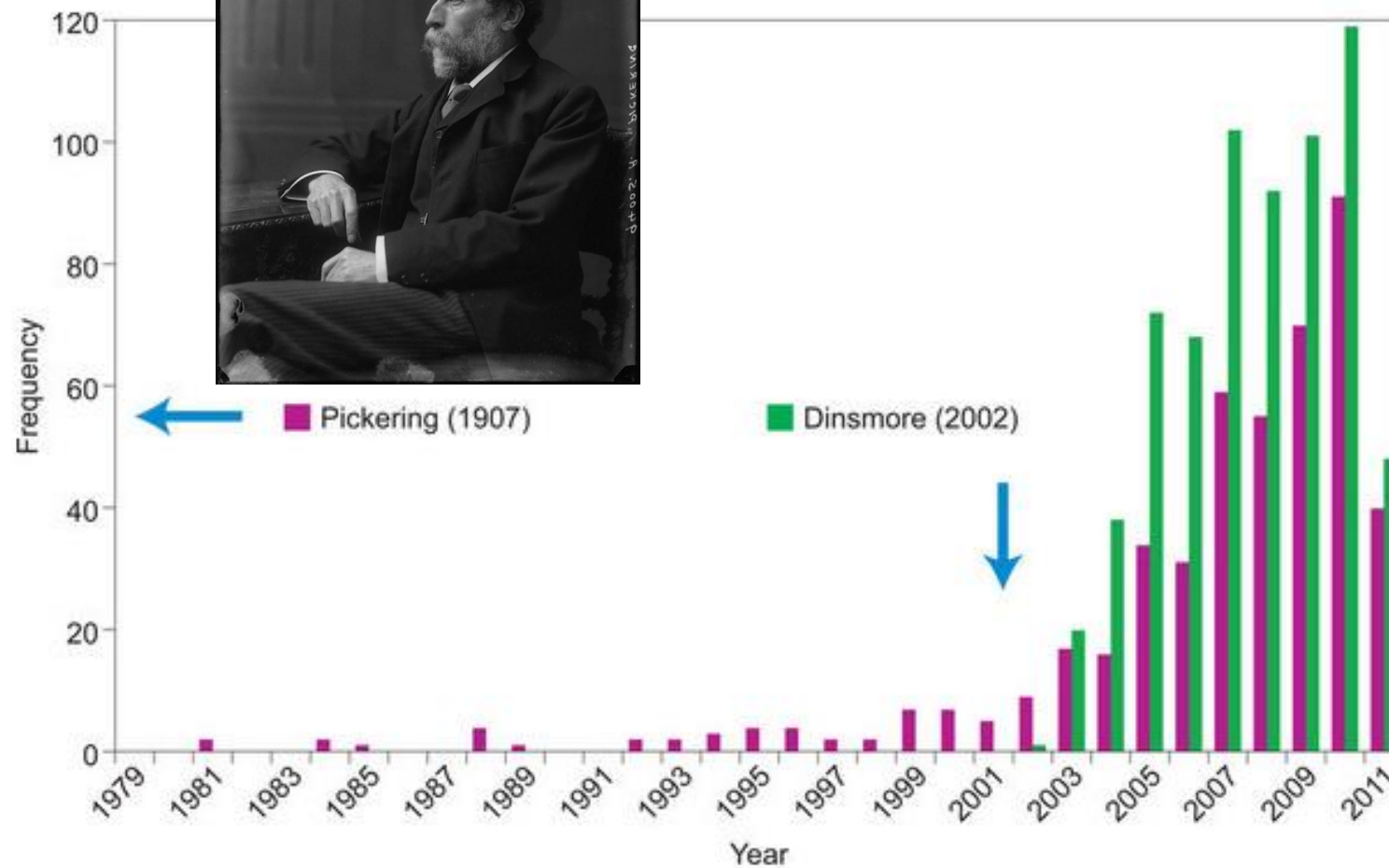
CXCVI.—*Emulsions.*

By SPENCER UMFREVILLE PICKERING, M.A., F.R.S.

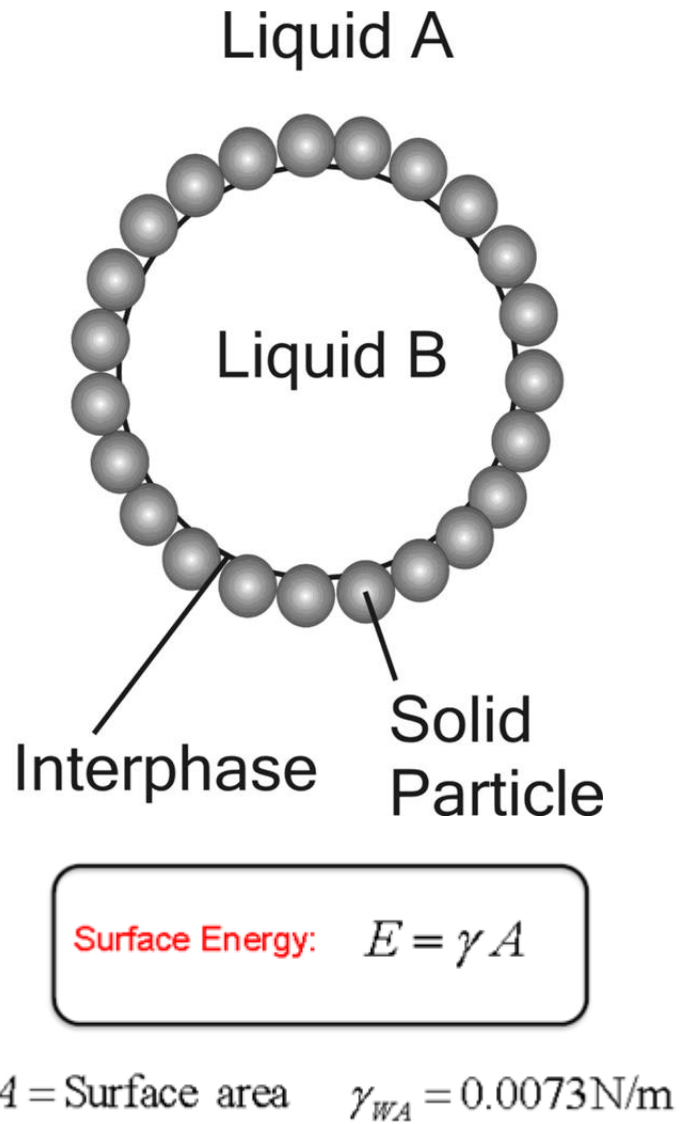
IN the Sixth Report of the Woburn Experimental Fruit Farm (Eyre and Spottiswoode, 1906) were published the results of an examination of emulsions of paraffin oil in solutions of soft soap, such as are used for insecticidal purposes; this examination has now been extended with the double object of obtaining an emulsifying agent which would, for practical purposes, not be open to the objections presented by those containing soap, and also of elucidating the nature of emulsification. The subject had already been investigated by Ramsden (*Proc. Roy. Soc.*, 1903, **72**, 156), but his work, unfortunately, did not come under the notice of the writer until that here described had been completed. It is satisfactory to find, however, that Ramsden, pursuing a different line of enquiry, should have arrived at an explanation of emulsification which is essentially the same as that given here.

Percival Spencer Umfreville Pickering (1858 –1920)

Percival Spencer Umfreville Pickering (1858–1920)



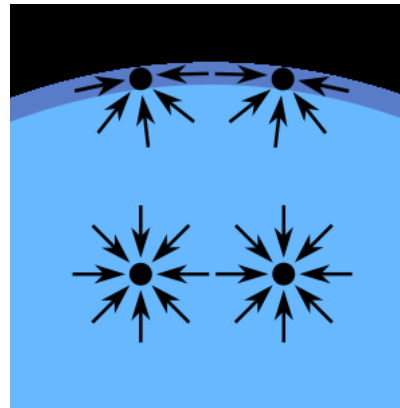
Lost history versus good science, Qian Wang, & Chris Toumey,
Nature Chemistry 3, 832–833, doi:10.1038/nchem.1179 (2011)



Capillary binding: A particle at the interface is trapped in a capillary barrier with a substantial energy cost of moving to either side of the liquid interface.

Origin of capillary binding:
Surface tension:

The forces on molecules of a liquid:




Surface tension preventing a paper clip from submerging



Capillary binding

- Submitted 2020
- Waiting list
- Granted 2021

Proposal Evaluation Form		
	EUROPEAN COMMISSION Horizon 2020 - Research and Innovation Framework Programme	Evaluation Summary Report

Call: H2020-MSCA-ITN-2020
Type of action: MSCA-ITN-ETN
Proposal number: 956248
Proposal acronym: PICKFOOD
Duration (months): 48
Proposal title: Pickering emulsions for food applications
Activity: MSCA-ITN-ETN: CHE

Coordination move
From DTU to NTNU



Matti Knaapila

N.	Proposer name	Country	Total Cost	%	Grant Requested	%
1	DANMARKS TEKNISKE UNIVERSITET	DK	595,044	14.18%	595,044	14.18%
2	KOBENHAVNS UNIVERSITET	DK	297,522	7.09%	297,522	7.09%
3	NORGES TEKNISK-NATURVITENSKAPELIGE UNIVERSITET NTNU	NO	584,684.64	13.94%	584,684.64	13.94%
4	INSTITUTT FOR ENERGITEKNIKK	NO	292,342.32	6.97%	292,342.32	6.97%
5	UPPSALA UNIVERSITET	SE	281,982.96	6.72%	281,982.96	6.72%
6	CHALMERS TEKNISKA HOEGSKOLA AB	SE	281,982.96	6.72%	281,982.96	6.72%
7	WAGENINGEN UNIVERSITY	NL	531,239.76	12.66%	531,239.76	12.66%
8	THE UNIVERSITY OF BIRMINGHAM	UK	303,172.56	7.23%	303,172.56	7.23%
9	UNIVERSITEIT VAN AMSTERDAM	NL	265,619.88	6.33%	265,619.88	6.33%
10	AALTO KORKEAKOULUSAATIO SR	FI	280,805.76	6.69%	280,805.76	6.69%
11	Stayfit Nutrisupplies Company Limited	TZ	215,588.88	5.14%	215,588.88	5.14%
12	UNILEVER INNOVATION CENTRE WAGENINGEN BV	NL	265,619.88	6.33%	265,619.88	6.33%
	Total:		4,195,605.6		4,195,605.6	

Evaluation Result

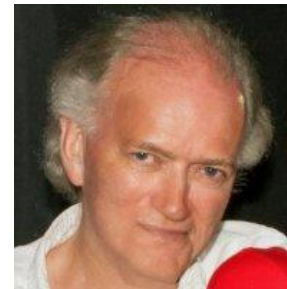
Total score: 94.00% (Threshold: 70/100.00)

«Pickfood» stands for «Pickering emulsions for food applications»

Coordinating the network



Matti Knaapila



Jon Otto Fossum

<https://pickfood.eu/>



PICKFOOD - Pickering emulsions for food applications

Horizon 2020 EU funded project



Safe, healthy and functional foods

Aims to study and develop Pickering emulsions and to evaluate their applications in safe, healthy and functional foods.

[Read More >](#)



Physics and food science

Will join forces in electrohydrodynamic processing to avoid the deterioration of thermo-sensitive compounds.

[Read More >](#)



Various competences

We want to specifically provide them with technological and methodological competences.

[Read More >](#)

Beneficiaries

Partners

ESRs

Training schools/workshops

All 15 Pickfood ESRs recruited through advertisements internationally in collaboration with other Pickfood beneficiaries

Recruitment process: All 15 Pickfood ESRs employed by August 2022

Some will complete PhD in 3 years (funded by Pickfood)

Some will complete PhD in 4 years (3 year funded by Pickfood + 1 year local funding)

PhDs awarded in Physcs, Chemistry, or Food Science.

5 out of in total 15 Pickfood ESRs will get their PhD from NTNU

3 employed by NTNU

+

2 employed by other beneficiaries (NTNU will award their PhD degree)



Namrah Azmi



Negar Azizi



Bruno Telli Ceccato



Hanna Demchenko



Rini PR



Bruno Telli Ceccato works as a PhD researcher at NTNU and will obtain a dual degree with the University of Campinas UNICAMP). Physics at NTNU and Chemical Engineering at UNICAMP.

Bruno holds both MSc and BSc in chemical engineering from Brazil (Paraná and Campinas) and gained significant expertise in modelling physicochemical properties of brewer's spent grain from craft beer production. He has also experience from private sector and integrated management systems for example. His research interests include moreover microfluidics and food materials processing.

Bruno is supervised by Jon Otto Fossum (NTNU Physics), Rosiane Lopes da Cunha UNICAMP Food Science), and Lucimara Gaziola de la Torre (UNICAMP Chemical Engineering).

48 months at NTNU, 10 months secondment in Brazil (UNICAMP + SME Noviga in Campinas)



Namrah Azmi works as a PhD researcher at Stayfit Nutrisupplies in Tanzania.

She comes from Mumbai where she received both her BSc and MSc. Namrah has wide experience over fine chemicals and applied materials science and patenting.

Namrah is supervised by Prof. Leonard Rweyemamu (Stayfit Nutrisupplies/UDSM) and Prof. Jon Otto Fossum (NTNU), and she receives her PhD from Norwegian University of Science and Technology.

Research 2 years in Tanzania, secondment minimum 1 year at NTNU)



Negar Azizi works as a PhD researcher at NTNU.

Negar has her background in nuclear physics and photonics and was most recently working in Institute for Advanced Studies in Basics Sciences in Iran. Her expertise includes advanced imaging and microscopic methods and optical methods like interferometry to study particles in biological applications and elsewhere — as well as fluid dynamics in general.

Negar is supervised by Prof. Paul Dommersnes, NTNU.

Secondment at Unilever, Netherlands.



Hanna Demchenko works as a PhD researcher at NTNU.

Hanna is a physicist in training and has her education from Ukraine and France (Kyiv and Lyon). She has also worked at Ingénierie des Matériaux Polymères in Villeurbanne. Her expertise includes aspects of surface and polymer science including polymer phase behavior and wetting behavior as well as near field interactions and particle-particle interactions.

Hanna is supervised by Adj. Prof. Matti Knaapila, NTNU.

Secondment in industry.



Rini P. R. works as a PhD researcher at the Institute for Energy Technology (IFE), Norway.

Rini received her master from the University of Calicut completing her master's thesis in the Indian Space Research Organization. She has strong background in theoretical physics focusing on scattering and transfer matrix analysis. In addition, she has also worked on optical properties of vegetable oils.

Rini is supervised for her PhD at NTNU by Adj. Prof. Kenneth Knudsen (IFE/NTNU).

Secondment at NTNU and at SME Giamag.

<https://pickfood.eu/>



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Beneficiaries

Partners

ESRs (**9 female, 6 male**)

Training schools/workshops

CHALMERS WORKSHOP ON MICROFLUIDIC TECHNOLOGY

 By PICKFOOD  9 May 2023  Events  chalmers, microfluidic, sweden



Welcome to a workshop on microfluidic technology at Chalmers University in Gothenburg, Sweden.

The event will take place at 22nd to 25th of May, 2023.

[Program to the PICKFOOD Network Workshop/Meeting on microfluidic technology at Chalmers \(PDF\)](#)



The Importance of Emulsification in Foods