RESEARCH OVERVIEW



CURRENT WBC-FUNDED RESEARCH

CURRENT PROJECTS ORGANIZED PER SITE IN ALPHABETICAL ORDER.

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING					
AUBURN UNIVERSITY										
O-07-PE: Understanding the Fundamental Influence of Wood Extractives on Wood										
AUBURN	IAB TC LEADS:	10/27/2022	1/1/2023	Expected	Year 1 / 2: \$53,206					
UNIVERSITY:	Bob Breyer, Bakelite			12/31/2024	Year 2 / 2: \$55,000					
S. Peresin	Bill Leggate, DAF									
S. Gururaja					Total-to-date:					
OREGON STATE:	• Arclin				\$108,206					
J. Nairn	Bakelite									
J. Simonsen	• DAF				Expected Request:					
VIRGINA TECH:	• FPL				\$0					
C. Frazier	Hexion									
	• Oxiquim									
STUDENT:	WVCO									
Diego Cuartas										
O-02-VI: Monitoring	Phenol Formaldehyde and W	ax Content with	Vis/Nir Smartpho	one Technology (r	new)					
AUBURN	IAB TC LEADS:	10/27/2022	1/1/2023	Expected	Year 1 / 1: \$10,500					
JNIVERSITY:	Chris Wren, Hexion			12/31/2023	Total-to-date:					
B. Via					\$10,500					
	Arclin									
STUDENT:	 Bakelite 				Expected Request:					
Seth Adusei	• DAF				\$0					
	• Freres									
	Hexion									
	• Oxiquim									
	• WVCO									

	OREGON STATE UNIVERSITY									
P-02-MU: Modeling of Edge Bending for Mass Timber Products										
OREGON STATE: Lech Muszynski John Nairn STUDENT: TBD	IAB TC LEAD: Danny Way, Boise Boise Hexion Roseburg Freres Bakelite	4/27/23	10/1/2023	Expected 12/31/25	Year 1 / 2: \$60,565 Total-to-date: \$60,565 Expected Request: Year 2 / 2: \$70,000 (Spring 2024)					

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
P-03-PR: Identifying n	naximum tolerance and mec	hanisms of inter	action for two co	mmon resins syste	ems and two fire retardant
treatments					
OREGON STATE: Gerald Presley John Simonsen	IAB TC LEAD: Tim Zattau, Roseburg	4/27/23	10/1/2023	Expected 12/31/24	Year 1 / 1: \$37,127 Total-to-date: \$37,127
John Nairn	ArclinBakelite				Expected Request:
STUDENT: Shane Johnson, MS	HexionRoseburg				\$0
	• WVCO		-		
	h Delamination to Study Moi				
OREGON STATE: A. Sinha J. Nairn STUDENT: Samuel Ayeni, MS. Elizabeth Israel, MS.	IAB TC LEAD: Danny Way, Boise Boise Freres	10/27/2022	11/1/2022	Expected 2024	Year 1 / 2: \$56,000 Year 2/2: \$51,000 Total-to-date: \$107,000 Expected Request: \$0
	। ed Hyperspectral Imaging and ।	d Chemometric 1	echniques for Es	timation of Percei	nt Wood Failure (PWF) in
Adhesive Bonds (new))				
	IAB TC LEAD: Darren Riedlinger, Arclin	10/27/2022	echniques for Est	Expected 2023	Year 1 / 1: \$7,108 Total-to-date: \$7,108
Adhesive Bonds (new, OREGON STATE: L. Schimleck	IAB TC LEAD:			Expected	Year 1 / 1: \$7,108 Total-to-date:
Adhesive Bonds (new, OREGON STATE: L. Schimleck L. Muszynski STUDENT:	IAB TC LEAD: Darren Riedlinger, Arclin Arclin Bakelite			Expected	Year 1 / 1: \$7,108 Total-to-date: \$7,108 Expected Request:
Adhesive Bonds (new, OREGON STATE: L. Schimleck L. Muszynski STUDENT: Ighoyivwi Onakpoma, MS	IAB TC LEAD: Darren Riedlinger, Arclin Arclin Bakelite Boise FPL Freres DAF Hexion Oxiquim	10/27/2022	11/1/2022	Expected 2023	Year 1 / 1: \$7,108 Total-to-date: \$7,108 Expected Request:
Adhesive Bonds (new, OREGON STATE: L. Schimleck L. Muszynski STUDENT: Ighoyivwi Onakpoma, MS	IAB TC LEAD: Darren Riedlinger, Arclin Arclin Bakelite Boise FPL Freres DAF Hexion	10/27/2022	11/1/2022	Expected 2023	Year 1 / 1: \$7,108 Total-to-date: \$7,108 Expected Request:
Adhesive Bonds (new, OREGON STATE: L. Schimleck L. Muszynski STUDENT: Ighoyivwi Onakpoma, MS N-02-MU: Long-Term OREGON STATE: L. Muszynski J. Nairn	IAB TC LEAD: Darren Riedlinger, Arclin Arclin Bakelite Boise FPL Freres DAF Hexion Oxiquim Response of Wood-Based Collab TC LEAD: Danny Way, Boise	10/27/2022 pmposites in Var	11/1/2022 iable Climate Cor	Expected 2023	Year 1 / 1: \$7,108 Total-to-date: \$7,108 Expected Request: \$0 Year 1 / 2: \$55,000 Year 2/2: \$55,000 Total-to-date:
Adhesive Bonds (new, OREGON STATE: L. Schimleck L. Muszynski STUDENT: Ighoyivwi Onakpoma, MS N-02-MU: Long-Term OREGON STATE: L. Muszynski	IAB TC LEAD: Darren Riedlinger, Arclin Arclin Bakelite Boise FPL Freres DAF Hexion Oxiquim Response of Wood-Based Collab TC LEAD:	10/27/2022 pmposites in Var	11/1/2022 iable Climate Cor	Expected 2023 additions Expected	Year 1 / 1: \$7,108 Total-to-date: \$7,108 Expected Request: \$0 Year 1 / 2: \$55,000 Year 2/2: \$55,000

FACULTY	TECHNICAL ADVISORS	AWARD	START DATE	END DATE	FUNDING					
		DATE	UA TECH							
VIRGINIA TECH M-04-FR: Wax Migration										
VIRGINIA TECH:	IAB TC LEAD:	8/27/20	TBD	2 years	Year 1 /2 : \$51,372*					
C. Frazier	Jesse Paris, WVCO	0/2//20	ופט	after start	Year 2/ 2: \$48,372					
C. Fraziei	Jesse Paris, WVCO			arter start	Total-to-date:					
STUDENT:	Bakelite				\$102,744					
JC Stant	• LP				\$102,744					
Je Stant	• WVCO				Expected Request:					
	VVVCO				\$0					
1-29-FR: Fundamenta	ls in Resole Formulation*				73					
VIRGINIA TECH:	IAB TC LEAD:	5/17/17	1/5/18	Expected	Year 1: \$45,558					
C. Frazier	Todd Miller, Hexion	3/1//1/	1/3/18	1/4/22	Year 2: \$45,558					
C. TTUZICI	Toda Willer, Trexion			1, 4, 22	Year 3: \$45,558					
STUDENT:	Arclin				Year 4: \$52,965					
Ryan Gray, PhD	Bakelite				Total-to-date:					
<i>γ γ</i> ,	Hexion				\$189,639					
*Project suspended	• Oxiquim									
until further notice	WVCO				Expected Request:					
					\$0					
I-28-FR: Wood Therm				I						
VIRGINIA TECH:	IAB TC LEAD:	10/24/17	1/15/19	Expected	Year 1 / 4: \$46,558					
C. Frazier	Darren Riedlinger, Arclin			12/2022	Year 2 / 4: \$46,558					
CTUDENT					Year 3 / 4: \$53,965					
STUDENT:	• Arclin				Year 4 / 4: \$53,966 Total-to-date:					
Sara Yazdi, PhD TBD	Bakelite				\$201,047					
טסו	• WVCO				\$201,047					
*Project suspended					Expected Request:					
until further notice					\$0					
aren farener motiee					Ψ0					
I-10-FR: Carbon Isoto	pe Ratios: Novel View of CH	₂ O Emissions								
VIRGINIA TECH:	IAB TC LEAD:	10/13/16	1/10/17	Expected	Part A (Shivyari):					
C. Frazier	Todd Miller, Hexion			5/14/22	Year 1: \$45,180					
					Year 2: \$45,180					
STUDENT:	Arclin				Year 3: \$45,180					
Niloofar Shivyari, MS	• Freres				Year 4: \$45,180					
Mark Cashman, PhD	Bakelite				Part B (Cashman):					
	Hexion				Year 5: \$0					
	Oxiquim				Year 6: \$33,145					
	• WVCO				Total-to-date: \$213,865					
					Expected Paguages					
					Expected Request:					
					\$0					

COMPLETED RESEARCH

PROJECTS HAVE PRESENTED FINAL REPORT. ORGANIZED PER SITE IN ALPHABETICAL ORDER

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
	A	UBURN UNIVE	RSITY		
K-03-PE: EFFECT OF NANC	OFIBRILLATED CELLULOSE (CNF) AT THE WC	OOD-BASED MA	ATRIX/RESIN IN	ITERFACE
Auburn: M. Soledad Peresin Brian Via STUDENT: M. Celeste Iglesias, PhD Philip McMichael, BS	IAB TC LEAD: Bob Breyer, G-P Chemicals	9/27/18	2/10/19	Expected 12/31/20	Year 1: \$33,219 Total-to-date: \$33,219 Expected Future Request: \$0
O-05-NE: A Fundamenta		GAN STATE UNIV on with Formala 10/27/2022		Expected	Year 1 / 1: \$30,000
M. Nejad & T. Wang STUDENT:	Sudip Chowdhury, WVCO		-3, 3, -3 -3	12/31/2023	Total-to-date: \$30,000
Debnath Debkumar	ArclinHexionOxiquimWVCO				Expected Request: \$0
SWEETWATER-21: Inves	tigating Lignin Consister	ncy from Batch-	to-Batch		
MICHIGAN STATE: M. Nejad STUDENT: Mohsen Siahkamari	IAB TC LEAD: Scott Tudman, Sweetwater* Sweetwater* Hexion WVCO *Former member	10/14/2021	11/1/2021	Expected 10/31/2022	Year 1 / 1: \$35,000 Total-to-date: \$35,000 Expected Request: \$0

M. Nejad STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD Michigan State: M. Nejad G-P Chemicals Hexion (Mona Alinejad, PhD) (IAB TC LEAD: Robert Breyer, G-P Chem) Michigan State: M. Nejad Arclin Mojgan Nejad G-P Chemicals Hexion Oxiquim H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Michigan State: Mojgan Nejad Arclin Mojgan Nejad G-P Chemicals Hexion Arclin Arclin Mojgan Nejad Arclin Henkel Hexion Oxiquim WVCO MORTH CAROLINA STATE UNIVERSITY Vear 1: \$46,000 Total-to-date: \$0 Expected Request: \$0 Femulation Year 1: \$21,652 Year 2: \$21,848 Total WBC Funding \$43,500 Total WBC Funding \$43,500 Total WBC Funding \$14,000 NORTH CAROLINA STATE UNIVERSITY Vear 1: \$46,000	FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
M. Nejad Sudip Chowdhury, WVCO STUDENT: Saeid Mikrafshar, PRD Dylian Nelson, B.S. Oxiquim Mariia Bespalova, Ph.D. SWEETWATER-20: Evaluating Suitability of Steam-Explosion Lignin for Different Polymeric Resin Applications MICHIGAN STATE: M. Nejad Scott Tudman, Sweetwater STUDENTS: Saeid Nikrafshar, PhD Mohsen Siahkamari, PhD Moha Alinejad, PhD L-19-NE: Suitability of different lignins as polyol replacement in PU adhesive formulation Michigan State: M. Nejad G-P Chemicals Hexion Oxiquim Roseburg WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad Gisal Kalami, PhD, Christian Henry, PhD) Oxiquim WVCO H-16-NE: Understanding the machinability of MDF and HDF North CAROLINA STATE UNIVERSITY L-2-VE: Understanding the machinability of MDF and HDF North CAROLINA STATE Gisal CLAD: G. Velarde D. Saloni OREGON STATE: Ardin Hexion Hexion Hexion Ardin Hexion Hexion Portal WBC Funding S14,000 Total WBC Funding S146,000 Total WBC Funding S146,000 Total WBC Funding S146,000 Total WBC Funding S46,000	M-05-NE: Improving Dur	ability of Wood Produc	ts by Reducing	Lignin Degrad	dation	
STUDENT: Saeid-Nikifashar, PhD Dythan Nelson, P. S. Mariia Bespalova, Ph.D. **Odquim** **WVCO*** **WVCO*** **SWEETWATER-20: Evaluating Suitability of Steam-Explosion Lignin for Different Polymeric Resin Applications* **MICHIGAN STATE:** M. Nejad **Scott Tudman, Sweetwater **STUDENTS:** Saeid Nikafshar, PhD Mohsen Slahkamari, PhD Mohsen Slahkamari, PhD Mohsen Slahkamari, PhD Mohsen Slahkamari, PhD Moha Alinejad, PhD) Michigan State: M. Nejad **G-P Chemicals** Hexion **Oxiquim** **Noseburg **WVCO** **H-16-NE: Comparative analysis of different lignins as phenol substitutes* **Michigan State:** Michigan State: Mojgan Nejad (Isal Kalami, PhD, Christian Henry, PhD) **Oxiquim** **WVCO** **H-16-NE: Understanding the machinability of MDF and HDF** **North Carolina State:** Oxiquim** **WVCO** **North Carolina State:** G. Velarde D. Saloni **ORGON STATE:** G. Velarde D. Saloni OREGON STATE: - Arauco - Arclin - Hexion - Hex		Sudip Chowdhury,	8/27/20	11/1/20	-	Year 2 / 2: \$20,000
### Description Processing Suitability of Steam-Explosion Lignin for Different Polymeric Resin Applications MICHIGAN STATE: IAB TC LEAD: 11/1/2020 11/1/20 10/31/21 Year 1 / 1: \$35,000	STUDENT:	W V C C				
Mariia Bespalova, Ph.D. - WVCO SWEETWATER-20: Evaluating Suitability of Steam-Explosion Lignin for Different Polymeric Resin Applications MICHIGAN STATE: M. Nejad SCOCTT Tudman, Sweetwater STUDENTS: Saeid Nikafshar, PhD Mona Alinejad, PhD Mona Alinejad, PhD Michigan State: M. Nejad - G-P Chemicals - Hexion (Mona Alinejad, PhD) (IAB TC LEAD: Brown, G-P Chem Michigan State: M. Nejad - G-P Chemicals - Oxiquim - WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Michig	Saeid Nikafshar, PhD	• LP				
MICHIGAN STATE: M. Nejad Scott Tudman, Sweetwater STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD) Michigan State: M. Nejad G-P Chemicals Hexion Hexion Michigan Rotate: Michigan State: Michigan S	Dyllan Nelson, B.S.	• Oxiquim				Expected Request:
MICHIGAN STATE: M. Nejad Scott Tudman, Sweetwater STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD Michigan State: M. Nejad G-P Chemicals Hexion Michigan State: Mojgan Nejad H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad (Isal Kalami, PhD, Christian Henry, PhD) Christian Henry, PhD) Christian Henry, PhD) D. Saloni OREGON STATE: G. Velarde D. Saloni OREGON STATE: F. Kamke M. Nejad Intil/1/2020 11/1/20 10/31/21 Fexpected Request: \$0 Expected Request: \$0 Fexpected Request: \$0 10/24/17 1/1/18 12/31/19 12/31/19 Year 1: \$21,652 Year 2: \$21,848 Total WBC Funding \$14,000 Total WBC Funding \$14,000 Total WBC Funding \$41,000 Total WBC Funding \$46,000	Mariia Bespalova, Ph.D.	• WVCO				\$0
M. Nejad Scott Tudman, Sweetwater STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD Michigan State: M. Nejad G-P Chemicals Hexion Hexion Hexion Hexion Here, G-P Chem) Michigan State: Mojgan Nejad Mojga	SWEETWATER-20: Evaluating	Suitability of Steam-Explos	ion Lignin for Diffe	rent Polymeric I	Resin Application	ns
STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD Michigan State: Mojgan Nejad (Isal Kalami, PhD, Christian Henry, PhD) Christian Henry, PhD) N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Mohosen Siahkamari, PhD MVCO WVCO SWEETWATER HEXION WVCO WVCO WVCO WVCO WVCO 1/1/18 12/31/19 Year 1: \$1,652 Year 2: \$21,848 Total WBC Funding \$43,500 Total WBC Funding \$43,500 Total WBC Funding \$14,000 Total WBC Funding \$47/19 (Final report delivered Oct 2020) Challened Arclin Hexion Arclin Hexion Arclin Hexion OREGON STATE: F. Kamke Arclin Hexion Arclin Hexion OREGON STATE: Arauco Arclin Arcl	MICHIGAN STATE:	IAB TC LEAD:	11/1/2020	11/1/20	10/31/21	Year 1 / 1: \$35,000
STUDENTS: Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD WCO I-19-NE: Suitability of different lignins as polyol replacement in PU adhesive formulation Michigan State: M. Nejad - G-P Chemicals - Hexion - Oxiquim - Roseburg WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Michigan State: Michigan State: Michigan State: Michigan State: Michigan State: Michigan Nejad - Arclin - WVCO WVCO WVCO WVCO WVCO WVCO FORTH CAROLINA STATE UNIVERSITY Year 1: \$21,652 Year 2: \$21,848 Total WBC Funding \$43,500 Total WBC Funding \$43,500 Total WBC Funding \$14,000 Total WBC Funding \$1,000 Total WBC Funding	M. Nejad	Scott Tudman,				Total-to-date: \$0
Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Mona Alinejad, PhD Michigan State: M. Nejad G-P Chemicals Hexion Oxiquim Roseburg WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad (Isal Kalami, PhD, Christian Henry, PhD) Christian Henry, PhD) N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke A Isining sa spolyol replacement in PU adhesive formulation 10/24/17 1/1/18 12/31/19 Year 1: \$21,652 Year 2: \$21,848 Total WBC Funding \$43,500 Year 1: \$4,605 For Arclin Hexion OXiquim For Arauco For Arau		Sweetwater				
Saeid Nikafshar, PhD Mohsen Siahkamari, PhD Monsen Siahkamari, PhD Monsen Siahkamari, PhD Mona Alinejad, PhD I-19-NE: Suitability of different lignins as polyol replacement in PU adhesive formulation Michigan State: M. Nejad • G-P Chemicals • Hexion • Oxiquim (Mona Alinejad, PhD) (IAB TC LEAD: Robert Breyer, G-P Chem) WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Michigan State: Michigan State: Michigan Nejad • GP Chemicals • Henkel (Isal Kalami, PhD, Christian Henry, PhD) • Oxiquim • WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke • Arclin • Hexion	STUDENTS:					Expected Request:
Mona Alinejad, PhD WVCO I-19-NE: Suitability of different lignins as polyol replacement in PU adhesive formulation Michigan State: M. Nejad	Saeid Nikafshar, PhD	• SWEETWATER				, ,
I-19-NE: Suitability of different lignins as polyol replacement in PU adhesive formulation Michigan State:	Mohsen Siahkamari, PhD	• HEXION				
Michigan State: M. Nejad G-P Chemicals Hexion Mona Alinejad, PhD) (IAB TC LEAD: Robert Breyer, G-P Chem) Michigan State: Michigan State: Mona Alinejad, PhD) (IAB TC LEAD: Robert Breyer, G-P Chem) Michigan State: Michigan State: Mojgan Nejad GP Chemicals Henkel Hexion Christian Henry, PhD) North Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Michigan State: Mona Alinejad, PhD) Oxiquim OREGON STATE: Arclin Hexion 10/24/17 1/1/18 12/31/19 Year 1: \$21,652 Year 2: \$21,848 Total WBC Funding \$43,500 Total WBC Funding \$14,000 Total WBC Funding \$46,000	Mona Alinejad, PhD	WVCO				
M. Nejad G-P Chemicals Hexion Oxiquim Roseburg WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad G-P Chemicals Henkel Hexion Oxiquim Oxiquim G-P Chemicals North CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke A G-P Chemicals Oxiquim Oxiquin Oxiq	I-19-NE: Suitability of di	fferent lignins as polyo	l replacement i	in PU adhesiv	re formulatio	n
Hexion Oxiquim S43,500 Oxiquim S43,500	Michigan State:					Year 1: \$21,652
(Mona Alinejad, PhD) (IAB TC LEAD: Robert Breyer, G-P Chem) WVCO H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad GP Chemicals Henkel Hexion Oxiquim WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke F. Kamke Possiburg WVCO Arclin Roseburg WVCO Arclin Roseburg WVCO Specific analysis of different lignins as phenol substitutes Year 1: \$14,000 Total WBC Funding \$14,000 Total WBC Funding \$14,000 Total WBC Funding \$146,000 Total WBC Funding For analysis of different lignins as phenol substitutes Year 1: \$46,000 Total WBC Funding \$46,000 For analysis of different lignins as phenol substitutes Year 1: \$46,000 Total WBC Funding \$46,000 Total WBC Funding \$46,000 For analysis of different lignins as phenol substitutes Year 1: \$46,000 Total WBC Funding \$46,000	M. Nejad	G-P Chemicals	10/24/17	1/1/18	12/31/19	Year 2: \$21,848
(IAB TC LEAD: Robert Breyer, G-P Chem) H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad Mojgan Nejad Mojgan Nejad Menkel Mojgan Nejad Menkel Mojgan Nejad Moj		Hexion				Total WBC Funding:
H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad GP Chemicals Henkel Henkel Oxiquim WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Arclin WVCO WCO WCO NORTH CAROLINA STATE UNIVERSITY 1-01-VE: Understanding the machinability of MDF and HDF N. Carolina State: (IAB TC LEAD: Darren Riedlinger, Arclin Arclin Arauco Arclin Hexion Control of the state of the s	(Mona Alinejad, PhD)	Oxiquim				\$43,500
H-16-NE: Comparative analysis of different lignins as phenol substitutes Michigan State: Mojgan Nejad GP Chemicals Henkel (Isal Kalami, PhD, Christian Henry, PhD) NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Arclin Hexion OREGON STATE: F. Kamke Arclin Hexion OREGON STATE: Hexion OCC July 18 July 18 July 19 Jul	(IAB TC LEAD: Robert	 Roseburg 				
Michigan State: Mojgan Nejad GP Chemicals Henkel Hexion Oxiquim WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Arclin Arclin Arclin Arclin Arclin Arclin Arclin Hexion Arclin Arclin Hexion Arclin Arclin Hexion Arclin Hexion Arclin Hexion Arclin Arclin Hexion Arclin Arclin Arclin Hexion Arclin	Breyer, G-P Chem)	_				
Mojgan Nejad • GP Chemicals • Henkel • Hexion • Oxiquim • WVCO I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke • GP Chemicals • Hexion • Hexion • Hexion • Oxiquim • WVCO NORTH CAROLINA STATE UNIVERSITY 1-02-VE: Understanding the machinability of MDF and HDF Vear 1: \$46,000 Total WBC Funding 10/13/16 3/8/18 4/7/19 (Final report delivered • Arauco • Arclin • Hexion	H-16-NE: Comparative a	nalysis of different ligi	ins as phenol s	substitutes		
(Isal Kalami, PhD, Christian Henry, PhD) NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke Arclin Hexion Hexion Hexion Hexion Hexion Arclin Hexion S14,000 NORTH CAROLINA STATE UNIVERSITY NORTH CAROLINA STATE UNIVERSITY 1-02-VE: Understanding the machinability of MDF and HDF Year 1: \$46,000 Total WBC Funding \$46,000 Foreign State: Arauco Arclin Hexion Oct 2020)	Michigan State:	Arclin				Year 1 : \$14,00
(Isal Kalami, PhD, Christian Henry, PhD) • Hexion • Oxiquim • WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni Darren Riedlinger, Arclin) OREGON STATE: F. Kamke • Hexion • Hexion • Hexion • Hexion • Hexion • Hexion	Mojgan Nejad	GP Chemicals	4/6/16	6/1/16	5/31/17	Total WBC Funding:
Christian Henry, PhD) Oxiquim WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde Darren Riedlinger, D. Saloni OREGON STATE: F. Kamke Hexion Oxiquim Vear 1: \$46,000 Total WBC Funding \$46,000 Final \$46,000 Cot 2020)		Henkel				\$14,000
Christian Henry, PhD) Oxiquim WVCO NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde Darren Riedlinger, D. Saloni OREGON STATE: F. Kamke Hexion Oxiquim NORTH CAROLINA STATE UNIVERSITY 1-02-VE: Understanding the machinability of MDF and HDF Year 1: \$46,000 Total WBC Funding \$46,000 Foreign to the state of the s	(Isal Kalami, PhD,	Hexion				
NORTH CAROLINA STATE UNIVERSITY I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde Darren Riedlinger, D. Saloni OREGON STATE: F. Kamke Oct 2020) NORTH CAROLINA STATE UNIVERSITY Year 1: \$46,000 Total WBC Funding \$46,000 Final \$46,000 CREGON STATE: F. Kamke Oct 2020)	Christian Henry, PhD)					
I-02-VE: Understanding the machinability of MDF and HDF N. Carolina State: G. Velarde D. Saloni OREGON STATE: F. Kamke (IAB TC LEAD: Darren Riedlinger, Arclin) Arclin • Arauco • Hexion (IAB TC LEAD: Darren Riedlinger, Alloh 10/13/16 3/8/18 4/7/19 (Final \$46,000 Final \$46,000 Cot 2020)		· ·				
N. Carolina State: G. Velarde Darren Riedlinger, D. Saloni OREGON STATE: F. Kamke OREGON STATE: Hexion (IAB TC LEAD: Darren Riedlinger, Arclin) 10/13/16 3/8/18 4/7/19 (Final Final Fin		NORTH CA	AROLINA STATE L	JNIVERSITY		
G. Velarde D. Saloni OREGON STATE: F. Kamke Darren Riedlinger, Arclin) OREGON STATE: Arclin Hexion Darren Riedlinger, Arclin 10/13/16 3/8/18 4/7/19 (Final report delivered Oct 2020)	I-02-VE: Understanding	the machinability of M	DF and HDF			
D. Saloni OREGON STATE: F. Kamke Arclin Arclin Arauco Arclin Hexion (Final \$46,000 report delivered Oct 2020)	N. Carolina State:	(IAB TC LEAD:				Year 1: \$46,000
OREGON STATE: F. Kamke Arauco Arclin Hexion Oct 2020)	G. Velarde	Darren Riedlinger,	10/13/16	3/8/18	4/7/19	Total WBC Funding:
F. Kamke • Arclin • Hexion Oct 2020)	D. Saloni	Arclin)			(Final	\$46,000
• Hexion Oct 2020)	OREGON STATE:	Arauco			report	
(6. 1. 1	F. Kamke	Arclin			delivered	
(Carlos Leca, MS) Roseburg		Hexion			Oct 2020)	
	(Carlos Leca, MS)	Roseburg				

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
J-05-SA: Investigating th	ne use of biopolymers f	or additive ma	nufacturing		
NC State:	(IAB TC LEAD: Bob				Year 1: \$16,000
D. Saloni	Breyer, GP	10/24/17	1/15/18	5/31/19	Total WBC Funding:
G. Velarde	Chemicals)				\$16,000
Auburn:	• Arauco				
M.S. Peresin	G-P Chemicals				
	Hexion				
(Christina Verdi, BS)	• INVISTA				
	Oxiquim				
	'				
I-13-SA: Novel adhesive	s from soybean protein	s and biopolyn	ner blends		
N. Carolina State:	Arclin				Year 1: \$14,250
D. Saloni	• CFP	10/13/16	3/1/17	4/30/18	Total WBC Funding:
G. Velarde	• Evertree				\$14,250
	GP Chemicals				
	Hexion				
(no student)	WVCO				
H-07-VE: Determination	of tool life during CNC	machining ope	erations for f	our panel pro	ducts
N. Carolina State:					Year 1: \$19,136
Guillermo Velarde	 Arauco 	10/15/15	1/1/16	12/15/16	Total WBC Funding:
Rick Lemaster	 Columbia FP 				\$19,136
(Conrad Michael, BS)					
H-04-LEM: <i>The use of a</i> c	oustic emission to clas	sify wood chips	s/particles		
N. Carolina State:					Year 1 : \$14,676
Rick Lemaster	Arauco	10/15/15	1/1/16	12/15/16	Total WBC Funding:
Guillermo Velarde	• LP				\$14,676
(Lyndsey Campbell,	Oxiquim				·
BS, Kamila Edwards,	- 4				
BS)					
	OREG	ON STATE UNIV	/ERSITY		
M-03-PR: PRELIMINARY INVE	STIGATION OF DMDHEU-TR	EATED STRAND BO	DARD		
OREGON STATE:	IAB TC LEAD:	8/27/2020	08/01/2021	Expected	Year 1 / 1 : \$12,468
F. Kamke	Jesse Paris, WVCO		11/1/2020	06/31/2022	Total-to-date:
G. Presley			PAUSED	7/31/2021	\$12,468
	• LP				
STUDENT:	WVCO				Expected Request:
Hanna Girod, BS Shane					\$0
Johnson, BS					

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
M-02-PR: IN-DEPTH CHARACT	ERIZATION OF BONDLINES II	N CLT MADE WITH	I PRESERVATIVE	-TREATED LUM	BER
OREGON STATE: G. Presley J. Cappellazzi	IAB TC LEAD: Bob Breyer, Bakelite	8/27/20	11/1/20 3/1/2021	Expected 9/30/2022	Year 1 / 1: \$20,000 Total-to-date: \$20,000
STUDENT: Cody Wainscott M-01-KA: REPEATABLE ME	Freres Bakelite WVCO ASSUREMENT METHOD FOR	OP DEPCENT WO	OD EAULURE		Expected Request: \$0
OREGON STATE:	IAB TC LEAD:	8/27/20	10/1/20	Fynastad	Voor 1 / 2, ¢E4 0E2
F. Kamke L. Muszynski	Sarath Vega, LP • ARCLIN	8/2//20	10/1/20	Expected 9/30/22	Year 1 / 2: \$54,053 Year 2 / 2: \$6,709* Total-to-date: \$60,762
STUDENT: Talbot Rueppel, MS	FRERES LUMBERG-P CHEMICALSLP				Expected Request: \$0
	OXIQUIMWVCO				*\$47,862 deducted
K-04-SI: ELUCIDATING THE	MECHANISM OF CNF REI	NFORCEMENT IN	WOOD ADHE	SIVES AND CO	MPOSITES
OREGON STATE: J. Simonsen J. Nairn	TBD	9/27/18	9/10/19	Expected 9/30/22	Year 1 / 3: \$45,557 Year 2 / 3: \$57,270 Year 3 / 3: \$15,462 Total-to-date:
STUDENT: Maria Muñoz, MS	ARCLINHEXIONOXIQUIM				\$118,289 Expected Request:
	• WVCO				\$0
J-01-SIN: UNDERSTANDING	ELEVATED TEMPERATUR	RE PERFORMANO	CE OF WOOD C	OMPOSITES	
OREGON STATE: A. Sinha STUDENT: Byrne Miyamoto, PhD	IAB TC LEAD: Patrick Farrell, Freres Lumber • ARCLIN	10/24/17	4/1/18	Expected 9/30/21	Year 1 / 2: \$54,705 Year 2 / 2: \$53,074 Total-to-date: \$107,779
bythe whyamoto, i ho	 FRERES LUMBER HEXION LP 				Expected Request: \$0

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
K-05-KA: ANALYSIS OF ADH	IESIVE ATOMIZATION ON	COMPOSITE BOI	ND PERFORMA	NCE	
OREGON STATE:	Arauco	9/27/18	7/1/19	Expected	Year 1: \$39,989
F. Kamke	Arclin			3/31/21	Year 2: \$51,001
J. Nairn	• Boise				Total-to-date: \$90,990
	G-P Chemicals				Expected Future
STUDENT:	Hexion				Request:
Dylan Willard, MS	LP Building Solu				\$0
	WVCO				
IAB TC LEAD:					
Jesse Paris, WVCO					
FRERES-19: MASS PLYWOO	DD PANELS: PERFORMA	NCE, DESIGN ANI	O APPLICATIO	N	'
OREGON STATE:	IAB TC LEAD:				Year 1: \$35,000
F. Kamke – Part I	Patrick Farrell,	8/1/19	10/1/19	Expected	Year 2: \$35,000
A. Sinha – Part II	Freres Lumber			9/30/21	Total-to-date: \$70,000
	 Freres Lumber 				Expected Future
STUDENT:	G-P Chemicals				Request:
Matthias Wind, PhD	Hexion				\$0
Micah Sutfin, MS	LP Building Solu				
	• WVCO				
J-04-SIN: USING CRACK GR	OWTH EXPERIMENTS TO	UNDERSTAND I	MOISTURE AN	D THERMAL D	URABILITY OF WBCS
OREGON STATE:	IAB TC LEAD:				Year 1: \$52,205
A. Sinha	Sudip Chowdhury,	10/24/17	4/1/18	9/30/20	Year 2: \$52,074
J. Nairn	WVCO				Total-to-date:
	Arclin				\$104,279
STUDENT:	G-P Chemicals				Expected Future
Sweta Mahapatra, MS	LP Building Solu				Request:
	Oxiquim				\$0
	• WVCO				
INVISTA-18: Moisture re-	sistance of wood-base	d composite m	aterials		
OREGON STATE:	(IAB TC LEAD: Mohan				Year 1: \$54,302
F. Kamke	Rao, INVISTA)	9/27/18	10/1/18	6/30/20	Year 2: \$42,569
S. Leavengood	• Arclin				Total WBC Funding:
	• Boise				\$96,871
	G-P Chemicals				
(Luis Molina, MS)	Hexion				
	• INVISTA				
	LP Building Solu				
	Oxiquim				
	Roseburg				

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
I-26-KA: Characterizing	accelerated weathering	g conditions (co	ntinuation o	of H-13-KA)	
OREGON STATE:	(IAB TC LEAD: Curtis				Year 1: \$46,038
F. Kamke	Burton, WVCO)	5/17/17	1/1/18	9/29/19	Year 2: \$1951
	Arclin				Total WBC Funding:
(Micah Sutfin, MS)	Boise				\$47,989
	• WVCO				
I-06-SIN: Understanding	moisture gradients du	ıring accelerate	ed weatherin	g through nu	merical modeling
OREGON STATE:	Ashland				Year 1: \$56,000
A. Sinha	Boise	10/13/16	4/1/17	8/15/18	Total WBC Funding:
F. Kamke	 Fraunhofer 				\$56,000
	• LP				
(Danny Way, PhD)	Weyerhaeuser				
	vi eyemacaser				
A-11-SM: Improving ble	nding efficiency and re	sin distribution	of the rotar	v drum hlendi	ina nrocess usina
discrete element modelii		siir aistribation	oj tile rotar	y arani bichai	ng process asing
UBC:	• Arclin	9/15/10	4/1/11	Expected	Year 1: \$44,000
G. Smith	GP Chemicals	3/13/10	4/1/11	Spring 2017	Year 2: \$25,206
G. Simul	• GP Chemicals			(3/10/17	Year 3: \$36,634
				defense)	Year 4: \$20,817
(Ving Li Teai DhD)				10/17:	Total WBC Funding:
(Ying-Li Tsai, PhD)				Delayed	\$126,657
				indefinitely.	\$120,057
				maemmery.	
F-02-LE: Checking in ma	ple plywood	I	I		
OREGON STATE:					Year 1: \$15,529
S. Leavengood	Columbia FP	10/16/14	1/1/16	3/31/18	Year 2: \$31,515
L. Muszynski	Henkel				Year 3: \$24,236
/51::-Is \A/: B.46\	 Weyerhaeuser 				Total WBC Funding:
(Elijah Wilson, MS)					\$70,280
I-20-KA: Comparison of	accelerated weathering	g test protocols	s – Part B (co	ntinuation of	H-13-KA)
OREGON STATE:		-			Year 1: \$6625
F. Kamke	Arclin	5/17/17	8/1/17	1/23/18	Total WBC Funding:
	Ashland	,	_,,	, , ,	\$6625
(Luis Molina, BS)	Boise				,
,	WVCO				
	• WVCO				
Fraunhofer-16: Wood co	omposite performance	assessment an	d certificatio	n needs for W	estern U.S.
OREGON STATE:					Year 1: \$105,736
F. Kamke	Arclin	4/6/16	6/1/16	12/31/17	Year 2: \$68,527
P.F. Laleicke	 Fraunhofer 				Year 3: \$59,422
	• WVCO				Total WBC Funding:
					\$233,685

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
I-08-LI: Lignin-based poly	ymers with enhanced o	adhesive and el	astomeric pr	operties	
OREGON STATE: Z. Glen Li	ArclinGP ChemicalsHexion	10/13/16	11/1/16	10/31/17	Year 1: \$16,650 Total WBC Funding: \$16,650
(Dylan Packard, BS)	OxiquimWVCO				
I-15-NA: Numerical simu	lations of adhesive pe	netration in va	rious wood s _l	pecies	
OREGON STATE: J. Nairn (Chad Hammerquist, PhD)	ArclinGP ChemicalsHexionWVCO	10/13/16	10/1/16	10/1/17	Year 1: \$28,166 Total WBC Funding: \$28,166
F-08-KA (OSU only): Wet	ting and diffusion asso	ociated with se	lected liquid/	wood interf	aces
OREGON STATE: F. Kamke (Balkis Bakar, Elizabeth Mills)	ArclinHexionWVCO	10/16/14	4/1/15 (OSU) 6/15/15	1/1/17 9/6/17	Year 1: \$21,670 Year 2: \$45,694 Year 3: \$11,227 Total WBC Funding: \$78,591
VIRGINIA TECH: C. Frazier (Christa Stables, MS)			(VT)		
F-01-KA: Multi-scale acc	elerated weathering o	-			
OREGON STATE: F. Kamke A. Sinha (Danny Way, MS)	ArclinAshlandBoiseFraunhoferLP	10/16/14	4/1/15	3/31/17	Year 1: \$55,857 Year 2: \$44,904 Total WBC Funding: \$100,761
H-13-KA: Comparison of	accelerated weathering	ng test protoco	ls		<u>'</u>
OREGON STATE: F. Kamke (Valeria Luna, BS, Tomas Lasserre, BS)	ArclinAshlandHexion	4/6/16	7/1/16	12/31/16	Year 1: \$8500 Total WBC Funding: \$8500
FUND-13: Multi-scale in	vestigation of adhesive	bond durabili	ty		1
OREGON STATE: F. Kamke A. Sinha (Paige McKinley, MS w/D. Ching, PhD, D.Way, PhD)	ArclinAPSUSDA FPL	8/1/13 (2-year award)	7/1/14	12/31/16 (NCE)	Year 1: \$98,096 Year 2: \$98,095 Total NSF Funding: \$196,191 Total WBC Funding: \$0

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
H-15-KA: Analysis of ver	tical density profile du	ring hot pressir	ng		
OREGON STATE: F. Kamke (Kenya Hazell, PhD, Günther Schagerl, BS)	AraucoArclinHexionLPOxiquim	4/6/16	7/1/16	10/31/16	Year 1: \$8845 Total WBC Funding: \$8845
H-03-LI: Bio-based polya	mide with oligomeric l	lignin backbone	2		<u> </u>
OREGON STATE: Z. (Glen) Li (Jacob Staudhammer, BS)	ArclinHenkelOxiquim	10/15/15	1/4/16	10/1/16	Year 1: \$2500 Total WBC Funding: \$2500
H-01-NA: Numerical sim	ulation of adhesive pe	netration into i	ealistic wood	d structures	
OREGON STATE: John Nairn (Chad Hammerquist, PhD)	States IndustriesWVCO	10/15/15	1/1/16	5/1/16	Year 1: \$8750 Total WBC Funding: \$8750
B-02-NA: Methodologies	for ranking resins by	their effects on	durability of	wood comp	osites
OREGON STATE: J. Nairn A. Sinha (B. Mirzaei, PhD, w/J. Adam, BS, D. Terry, BS)	ArclinFraunhofer-WKIGP Chemicals	10/18/12	1/1/13	3/31/16	Year 1: \$43,498 Year 2: \$43,373 Year 3: \$49,682 Total WBC Funding: \$136,553
D-02-KA: Application of	। accelerated weatherin	g for the devel	opment of ar	NDT produc	t durability
assessment toolkit			, ,	•	,
OREGON STATE: F. Kamke (P.F. Laleicke, PhD)	 GP Chemicals WVCO	10/8/13	1/1/14	12/31/15	Year 1: \$25,670 Year 2: \$54,325 Total WBC Funding: \$79,995
SUPP-OSU-13: I/UCRC In	novations Fellows Sup	plement (NSF-1	funded)		
OREGON STATE: F. Kamke (M. Schwarzkopf, PhD)	Fraunhofer-WKI	9/25/13 (1-yr award)	9/25/13	7/30/14	Year 1: \$16,633 Total WBC Funding: \$0 Total NSF Funding: \$16,633
A-22-SM: Resin efficiency	for non-structural pai	nels			'
UBC: G. Smith (J. Dettmer, MS) OREGON STATE: L. Muszynski J. Simonsen (N. Lampert, MS)	AshlandGP ChemicalsMomentive	9/15/10	4/1/11	4/16/14	Year 1: \$59,500 Year 2: \$53,811 Total WBC Funding: \$113,311

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
A-04-KA: Microscale w	ood adhesive interaction	า			
OREGON STATE: F. Kamke L. Muszynski J. Nairn (J. Paris, PhD, M. Schwarzkopf, PhD)	ArclinAshlandHenkelWeyerhaeuser	9/15/10	10/1/10	10/1/13	Year 1: \$35,600 (total: \$85,600) Year 2: \$62,230 Year 3: \$48,577 Total WBC Funding: \$146,407
C-01-KA: Preliminary in	vestigation of adhesive	bonds using IR	microscopy		
OREGON STATE: F. Kamke (P. Boehm, MS, S. Freitas, PhD)	 GP Chemicals WVCO	10/18/12	2/1/13	7/31/13	Year 1: \$10,937 Total WBC Funding: \$10,937
A-19-GU: Impact of sho	ort veneer on bending pi	roperties of LVL	•		
OREGON STATE: R. Gupta F. Kamke (S. Mlasko, BS, M. Belda, BS)	 GP Chemicals Momentive Weyerhaeuser	9/15/10	1/1/11	7/30/11	Year 1: \$9000 Total WBC Funding: \$9,000

VIRGINIA TECH						
N-06-CA: Bench-Scale Chard	acterization of Joints and Coat	ings				
VIRGINIA TECH: S. Case B. Lattimer	IAB TC LEAD: Sudip Chowdhury, WVCO	10/14/2021	1/1/2022	Expected 08/30/2022	Year 1 / 1: \$31,342 Total-to-date: \$31,342	
STUDENT: Akhilesh Kulkarni, MS	ArclinFreresLP				Expected Request: \$0	
K-02-CA: Bench-Scale Scree	ening Test for ASTM E119					
VIRGINIA TECH: S. Case B. Lattimer STUDENT: Michael Gangi, PhD	IAB TC LEAD: Jim Ni, LP ARCLIN FRERES LUMBER G-P CHEMICALS LP OXIQUIM	10/10/19	1/1/20	Expected 12/2021	Year 1: \$55,399 Year 2: \$55,000 Total-to-date: \$110,399 Expected Request \$0	

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
J-02-HA: GEOMETRY AND I	MECHANICS OF PANEL V	NARPAGE			
VIRGINIA TECH:	IAB TC LEAD:				Year 1: \$47,810
J. Loferski	Dave Ruth, Boise)	10/24/17	12/26/17	Expected	Year 2: \$50,000
Univ of Nevada/Reno:	• Boise			7/13/21	Year 3: \$42,079
J. Hanna	• CFP				Total-to-date:
	Oxiquim				\$139,889
STUDENT:	 Roseburg 				Expected Future
Harrison Wood, MS;					Request:
Kerrigan Strong, MS					\$0
I-01-DI: DEVELOPING METH	HODOLOGY TO INTERRO	GATE HIGH/I OM	/ DENSITY WA	OD RONDS (F	ORMERI V
CHARACTERIZING ADHESIO				TOD DON'DS (T	OKIVIEKET.
VIRGINIA TECH:	IAB TC LEAD:	10/13/16	5/1/17	Expected	Year 1: \$42,153
S. Case	Sudip Chowdhury	10/15/10	3,1,1,	12/30/20	Year 2: \$43,766
D. Dillard	• CFP			12,30,20	Year 3: \$43,773
C. Frazier	G-P Chemicals				Total-to-date:
	Queensland				\$129,692
STUDENT:	WVCO				Expected Future
Kayla Howes, MS	- W V C O				Request:
Yuqin Li, PhD					\$0
Angelo Said, BS					, , , , , , , , , , , , , , , , , , ,
Jessie Johnson, BS					
H-17-ZS: Adhesive challe	nges with maple & hic	kory veneer at	low moisture	e levels	
VIRGINIA TECH:	(IAB TC LEAD: Fred				Year 1: \$38,784
Zink-Sharp	Carter, CFP)	4/6/16	9/1/16	4/15/19	Year 1.5: \$20,446
(Cody Wykle, MS;	• CFP				Total WBC Funding:
Alexandra Flevarakis,	Henkel				\$59,230
BS; Dylan Harris, BS)					
I-31-RO: Dispersion force	e-based new adhesive	concept		ı	
VIRGINIA TECH:	(IAB TC LEAD: TBD)	5/17/17	1/1/18	Expected	Year 1: \$48,582
M. Roman	Arclin			12/31/21	Total-to-date: \$48,582
	 Fraunhofer 			(Project	Expected Year 2
	GP Chemicals			cancelled	Request:
	Hexion			by IAB TC,	\$50,338
(Apratim Jash, PhD)	Oxiquim			10/18)	(Fall 2018)
	• WVCO				(9/27/18: cancelled;
					returned \$34,431)
F-07-FR: MDF fiber quality	ty				
VIRGINIA TECH:	Arauco NA	10/16/14	10/20/14	5/9/18	Year 1: \$48,890
C. Frazier	• Arclin				Year 2: \$48,890
	Columbia FP				Year 3: \$27,310
(Mohammad Tasooji,	GP Chemicals				Total WBC Funding:
PhD)	• WVCO				\$125,090

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
-08-KA (VT only): Wetti	ng and diffusion assoc	iated with sele	cted liquid/v	vood interfac	es
OREGON STATE: F. Kamke (Balkis Bakar,	ArclinHexion	10/16/14	4/1/15 (OSU)	1/1/17	Year 1: \$42,559 Year 2: \$39,255 Total WBC Funding:
VIRGINIA TECH: C. Frazier (Christa Stables, MS)	• WVCO		6/15/15 (VT)	9/6/17	\$81,814
-05-FR: Biogenic formal	ldehvde emission			l	
VIRGINIA TECH: C. Frazier	Arauco NAArclinHexion	10/16/14	10/1/14	12/20/16	Year 1: \$48,890 Year 2: \$41,890 Total WBC Funding: \$90,780
(Guigui Wan, PhD)	Oxiquim				φ30,700
-04-FR: <i>Organic fillers u</i>	sed in PF resoles	I			I
VIRGINIA TECH: C. Frazier (X. (Chuck) Wang, MS)	ArclinGP ChemicalsHexionWVCO	10/16/14	10/30/14	8/31/16	Year 1: \$16,000 Year 2: \$47,446 Total WBC Funding: \$63,446
SUPP-IMD-13: Innovativ	∟ e Managing Director N	 Model I/UCRC S	upplement		
VIRGINIA TECH: C. Frazier (L. Caudill)	• NA	9/18/13 (up to 3 yr. award)	9/18/13	7/31/16	Year 1: \$200,000 Year 2: \$200,000 Total NSF Funding: \$400,000 Total WBC Funding: \$
G-05-FR: Surfactants: Fu	ındamental impacts in	veneer bondin	ıq		<u> </u>
VIRGINIA TECH: C. Frazier (TBD)	ArclinGP ChemicalsHexion	5/7/15	TBD	(Postponed indefinitely due to Phase II delay)	Year 1: \$49,636 Total-to-date: \$0 Expected Year 2 funding request: \$49,636
Queensland-13: Adhesio	n fundamentals in spo	otted gum (Cory	ımbia sp.)	<u> </u>	
VIRGINIA TECH: C. Frazier (C. Burch, MS)	HexionQueenslandGovt.	7/1/12	1/22/13	11/6/15	Year 1: \$40,000 Year 2: \$40,000 Total WBC Funding: \$80,000

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
18-ZS: Understanding	the differences in bond	ding characteris	tics of Doug	las-fir and SY	'P wood
VIRGINIA TECH:					Year 1: \$29,550
Zink-Sharp	GP Chemicals	9/21/11	1/8/13	11/9/15	Year 2: \$29,750
S. Renneckar	Henkel	-,,	_, _,	, _,	Year 3: \$3006
	Hexion				Total WBC Funding
(K. Mirabile, MS)	• nexion				\$62,306
06-FR: Formaldehyde	in tree increment cores				
VIRGINIA TECH:					Year 1 : \$7300
C. Frazier	Arauco NA	10/16/14	10/20/14	7/15/15	Total WBC Funding
(H.Wise, BS, G.Lewis,	GP Chemicals				\$7300
BS)					·
-12-CO: Fundamentals	of formaldehyde dete	ction and emiss	ion determin	ation	
Maine:					Year 1: \$19,500
B. Cole	Arclin	9/15/10	1/10/11	12/31/14	(Total: \$44,500)
D. Gardner	GP Chemicals				Year 2: \$45,964
R. Fort	Momentive				Year 3: \$47,340
VIRGINIA TECH:					Year 4: \$48,950
C. Frazier	• Solenis				Total WBC Funding
(S. Blosch, A.					
					\$186,754
Hellenbrand, MS)					
JND-12: <i>Mechanisms</i>	of wood-generated for	maldehyde emi	ssion		
(Continued as F-05-F	R: Biogenic formaldeh	yde emission, F	all 2014)		
VIRGINIA TECH:					Year 1: \$99,725
C. Frazier	 NA/pending 	8/15/11	5/21/12	9/30/14	Year 2: \$99,725
		(2-yr.			Total NSF Funding
(G. Wan, PhD)		award)			\$199,450
		·			Total WBC Funding
					\$0
-24-FR: Influence of fil	ler particle size on adhe	esive penetratio	on and perfoi	rmance	
VIRGINIA TECH:					Year 1: \$11,612
C. Frazier	 GP Chemicals 	9/15/10	1/18/11	9/22/14	Year 2: \$7836
	 Momentive 				Year 3: \$38,760
(X. Yang, PhD)	• WVCO				Year 4: \$38,687
					Total WBC Funding
					\$96,895
					\$96,895
					\$96,895

FACULTY	TECHNICAL ADVISORS	AWARD DATE	START DATE	END DATE	FUNDING
A-14-FR: Formaldehyde o	determination through	liquid extracti	on (formerly	, Wood modi	fications promoting
durable adhesion)					
VIRGINIA TECH:					Year 1: \$48,000
C. Frazier	• Henkel	9/15/10	8/10/11	5/29/14	Year 2: \$38,000
Zink-Sharp	 Weyerhaeuser 				Year 3: \$18,600
	• WVCO				Total WBC Funding:
(M. Tasooji, MS)					\$104,600
D-01-FR: Formaldehyde/	wood mass transfer				
VIRGINIA TECH:					Year 1: \$38,795
C. Frazier	Arclin	10/8/13	8/26/13	Project	Total WBC Funding: \$
(C. Burch – reassigned				terminated	(LCC: funds returned)
to Queensland-13)				4/17/14	
B-01-LI: Developing a ref	erence material for for	rmaldehyde en	nissions test	ing	
VIRGINIA TECH:					Year 1: \$44,500
J. Little	Arclin	6/20/12	8/27/12	8/26/13	
S. Cox	 Weyerhaeuser 				Total WBC Funding:
C. Frazier					\$44,500
(X. Zhao, MS)					