

ZMLUVA

o poskytnutí dotácie na spolufinancovanie projektu výskumu a vývoja európskej iniciatívy EUREKA

uzatvorená podľa § 8 a § 10 ods. 3 písm. n) zákona č. 172/2005 Z. z. o organizácii štátnej podpory výskumu a vývoja a o doplnení zákona č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy v znení neskorších predpisov a § 8a ods. 9 zákona č. 523/2004 Z. z. o rozpočtových pravidlách verejnej správy a o zmene a doplnení niektorých zákonov v znení neskorších predpisov

(ďalej len „zmluva“)
medzi nasledovnými zmluvnými stranami

Poskytovateľ:	Ministerstvo školstva, vedy, výskumu a športu SR
Sídlo:	Stromová 1, 813 30 Bratislava
zastúpený:	Mgr. Daniel Bútora
Osoba oprávnená rokovať v odborných veciach:	Mgr. Martin Šponiar, PhD., ROIŠPEMIVV
Tel. číslo:	02/59374728
Fax:	02/59374711
E-mail:	martin.sponiar@minedu.sk
IČO:	00 164 381
DIČ:	2020798725
Bankové spojenie:	Štátna pokladnica
IBAN:	SK80 8180 0000 0070 0006 5236

(ďalej len „poskytovateľ“)

Príjemca:	Ústav polymérov Slovenskej akadémie vied, v.v.i.
Sídlo:	Dúbravská cesta 9, 845 41 Bratislava
zastúpený:	Mgr. Jaroslav Mosnáček, DrSc.
Osoba oprávnená rokovať v odborných veciach:	Mgr. Jaroslav Mosnáček, DrSc.
Tel. číslo:	+421 2 3229 4388
E-mail:	jaroslav.mosnacek@savba.sk
IČO:	00586927
DIČ:	20 20 830 702
Bankové spojenie:	Štátna pokladnica
IBAN:	SK40 8180 0000 0070 0066 9005

Právna forma: verejná výskumná inštitúcia zriadená podľa zákona č. 243/2017 Z. z. o verejnej výskumnej inštitúcii a o zmene a doplnení niektorých zákonov

(ďalej len „príjemca“)
(pre „poskytovateľa“ a „príjemcu“ ďalej v zmluve spolu len „**zmluvné strany**“)

Preambula

V roku 1985 vznikla európska iniciatíva EUREKA, ktorá je zameraná na podporu projektov trhovo-orientovaného výskumu a vývoja s cieľom zvýšiť konkurencieschopnosť európskeho priemyslu na globálnej úrovni. Vláda Slovenskej republiky na svojom rokovaní schválila plné členstvo Slovenskej republiky v európskej iniciatíve EUREKA dňa 13. septembra 2000, na základe čoho dňa 28. júna 2001 na 19. ministerskej konferencii EUREKA v Madride bola Slovenská republika prijatá za riadneho člena EUREKA.

Národným financujúcim orgánom, ktorý zabezpečuje poskytovanie prostriedkov štátneho rozpočtu Slovenskej republiky na spolufinancovanie účasti slovenských subjektov výskumu a vývoja v projektoch európskej iniciatívy EUREKA, je Ministerstvo školstva, vedy, výskumu a športu Slovenskej republiky.

Dňa 28.03. 2023 bol Skupinou na vysokej úrovni HLG EUREKA schválený projekt „**Biotape**“ (ďalej len „projekt“), čím získal štatút EUREKA a bol komisiou kladne vyhodnotený pre financovanie na základe uznesenia Expertnej komisie pre iniciatívu EUREKA a program Eurostars 2 zo dňa 27.12.2022.

Technická špecifikácia projektu (základné informácie o projekte a zodpovednej organizácii, zoznam riešiteľov a ich kapacít viazaných na riešenie projektu) je uvedený Prílohe č. 1 časť A, ciele, harmonogram a očakávané výstupy projektu sú uvedené Prílohe č. 1 časť B a rozpočet projektu je uvedený v Prílohe č. 1 časť C. Príloha č. 1 je neoddeliteľnou súčasťou zmluvy.

Čl. 1

Predmet zmluvy

- 1) Na základe tejto zmluvy sa poskytovateľ zaväzuje poskytnúť príjemcovi dotáciu vo výške 150 000,- eur (slovom jednostopäťdesiat tisíc eur) z prostriedkov štátneho rozpočtu Slovenskej republiky (ďalej len „dotácia“) na zabezpečenie spolufinancovania riešenia projektu (ďalej len „účel určený touto zmluvou“).
- 2) Príjemca sa zaväzuje zabezpečiť riešenie projektu počas celej doby jeho realizácie, t. j. od: 01.07. 2023 do 01.07.2026 (ďalej len „doba riešenia projektu“).

Čl. 2

Práva a povinnosti zmluvných strán

- 1) Celkové náklady na projekt predstavujú 187 500,- eur (slovom: jednoosmdesiatšedemtisíc päťsto eur), z toho:
 - a) výška dotácie zo štátneho rozpočtu na krytie oprávnených nákladov je: 150 000,- eur (slovom jednostopäťdesiat tisíc eur), z toho:
 - bežné výdavky: 116 000,- eur (slovom: jednošesťdesiatšesťtisíc eur)
 - kapitálové výdavky: 34 000,- eur (slovom: tridsaťštyritisíc eur)
 - b) výška vlastných prostriedkov príjemcu je: 37 500,- eur (slovom: tridsaťsedemtisíc päťsto eur), z toho:
 - bežné výdavky: 37 500,- eur (slovom: tridsaťsedemtisíc päťsto eur)
 - kapitálové výdavky: 0,- eur (slovom: nula eur)
- 2) Poskytovateľ poskytne príjemcovi dotáciu vo forme bežných výdavkov na bankový účet

príjemcu uvedený v záhlaví tejto zmluvy v zmysle Prílohy č. 1 v časti C, nasledovným spôsobom:

- v roku 2023 v celkovej výške 25 000,- eur (slovom: dvadsaťpäťtisíc eur) z toho:
 - 18 000,- eur (slovom: osemnásťtisíc eur) vo forme bežných výdavkov
 - 7 000,- eur (slovom: sedemtisíc eur) vo forme kapitálových výdavkov
 - v roku 2024 v celkovej výške 50 000,- eur (slovom: päťdesiatitisíc eur) z toho:
 - 35 000,- eur (slovom: tridsaťpäťtisíc eur) vo forme bežných výdavkov
 - 15 000,- eur (slovom: pätnásťtisíc eur) vo forme kapitálových výdavkov
 - v roku 2025 v celkovej výške 50 000,- eur (slovom: päťdesiatitisíc eur) z toho:
 - 38 000,- eur (slovom: tridsaťosemtisíc eur) vo forme bežných výdavkov
 - 12 000,- eur (slovom: dvanásťtisíc eur) vo forme kapitálových výdavkov
 - v roku 2026 v celkovej výške 25 000,- eur (slovom: dvadsaťpäťtisíc eur) z toho:
 - 25 000,- eur (slovom: dvadsaťpäťtisíc eur) vo forme bežných výdavkov
 - 0,- eur (slovom: nula eur) vo forme kapitálových výdavkov
- 3) Poskytovateľ poskytne príjemcovi v rokoch 2023 - 2026 na spolufinancovanie projektu dotáciu vo výške 80% z celkových oprávnených nákladov na riešenie projektu, uvedených v Prílohe č. 1 časť C tejto zmluvy.
 - 4) Príjemca sa zaväzuje spolufinancovať schválený projekt z vlastných zdrojov v celkovej výške 37 500,- eur (slovom: tridsaťsedemtisíc päťsto eur), čo predstavuje 20 % z celkových oprávnených nákladov na riešenie projektu počas doby riešenia projektu, podľa harmonogramu uvedeného v Prílohe č. 1 časť C tejto zmluvy.
 - 5) Oprávnenými nákladmi na riešenie projektu (ďalej len „oprávnené náklady“) sú náklady podľa § 17 ods. 2 až 4 zákona č. 172/2005 Z. z. o organizácii štátnej podpory výskumu a vývoja a o doplnení zákona č. 575/2001 Z. z. o organizácii činnosti vlády a organizácii ústrednej štátnej správy v znení neskorších predpisov (ďalej len „zákon č. 172/2005 Z. z.“), ktoré musia byť v súlade s Nariadením Komisie (EÚ) č. 651/2014 zo 17. júna 2014 o vyhlásení určitých kategórií pomoci za zlučiteľné s vnútorným trhom podľa článkov 107 a 108 Zmluvy o fungovaní Európskej únie. Oprávnenosť nákladov na riešenie projektu v zmysle tejto zmluvy posudzuje poskytovateľ alebo ním poverená tretia osoba.
 - 6) Cestovné náhrady môžu byť z poskytnutej dotácie uhradené len do výšky určenej zákonom č. 283/2002 Z. z. o cestovných náhradách v znení neskorších predpisov.
 - 7) Úhrada dane z pridanej hodnoty nie je u príjemcu považovaná za oprávnený náklad na riešenie projektu, ak má príjemca nárok na jej odpočítanie z vlastnej daňovej povinnosti.
 - 8) Za oprávnené použitie dotácie sa považuje bezhotovostný prevod finančných prostriedkov za účelom úhrady oprávnených nákladov na účel určený touto zmluvou (ďalej len „oprávnené použitie dotácie“).
 - 9) Oprávneným použitím dotácie sú tiež bezhotovostné úhrady z bankového účtu príjemcu uvedeného v záhlaví zmluvy na iný účet príjemcu, ak príjemca pred poukázaním dotácie na bankový účet uhradil z vlastných finančných prostriedkov výdavok na účel určený touto zmluvou, najviac však v sume určenej v tejto zmluve a najviac v sume takto použitých vlastných finančných prostriedkov.

- 10) Zmluvné strany sa dohodli, že dotáciu možno použiť na oprávnené náklady, ktoré vznikli v období od 1. 7. 2023 do 1. 7. 2026.
- 11) V roku 2023 poskytovateľ poskytne dotáciu na bankový účet príjemcu do 20 pracovných dní odo dňa účinnosti tejto zmluvy.
- 12) V rokoch 2024 – 2026 poskytovateľ poskytne dotáciu na bankový účet príjemcu na základe výsledkov monitorovania a na základe kontroly použitia dotácie poskytnutej príjemcovi v predchádzajúcom rozpočtovom roku, ktorú vykonáva poskytovateľ.
- 13) Príjemca sa zaväzuje použiť dotáciu výlučne na účel určený touto zmluvou, v súlade s touto zmluvou a výlučne na oprávnené náklady. Príjemca zodpovedá za účelné, hospodárne, účinné a efektívne použitie dotácie a jej riadne vedenie v účtovníctve v zmysle príslušných právnych predpisov, najmä zákona č. 431/2002 Z. z. o účtovníctve v znení neskorších predpisov.
- 14) Príjemca sa zaväzuje, že predloží poskytovateľovi vyúčtovanie poskytnutej dotácie podpísané štatutárnym orgánom za každý uzatvorený rozpočtový rok vypracované podľa skutočných nákladov na riešenie projektu a platných usmernení a pokynov poskytovateľa v termíne do 28. februára nasledujúceho rozpočtového roka v prípade poskytnutia dotácie pred 31. júlom rozpočtového roka a v prípade poskytnutia dotácie po 31. júli rozpočtového roka v termíne do 15. apríla nasledujúceho rozpočtového roka; za posledný rok riešenia projektu do 31. augusta 2026.
- 15) Vyúčtovanie musí obsahovať najmä
 - a) vecné vyhodnotenie plnenia účelu;
 - b) súpis realizovaných činností s vyčíslením použitých finančných prostriedkov;
 - c) kópie príslušnej dokumentácie preukazujúcej čerpanie finančných prostriedkov (napr. kópie faktúr a výpisov z bankového účtu príjemcu, kópie dohôd o vykonaní práce, kópie mzdových listov, podkladov z účtovníctva a výpisov z bankového účtu príjemcu preukazujúcich úhradu odvodov a miezd).
- 16) Riadne a úplné vyúčtovanie poskytnutej dotácie je jednou z podmienok pre poskytnutie dotácie v nasledujúcom rozpočtovom roku. Spôsob vyúčtovania poskytnutej dotácie bližšie určí poskytovateľ v nadväznosti na usmernenie Ministerstva financií Slovenskej republiky. Príjemca sa zaväzuje, že zabezpečí vecné vyhodnotenie a finančné dokladové vyúčtovanie dotácie zo štátneho rozpočtu podľa všeobecne záväzných právnych predpisov, podľa Pokynu Ministerstva financií Slovenskej republiky za kalendárny rok a v termínoch určených Ministerstvom financií Slovenskej republiky a poskytovateľom. Ročné vyúčtovanie dotácie príjemca predloží poskytovateľovi v termínoch podľa ods. 14 a v rozsahu podľa ods. 15 taktiež v elektronickej podobe na adresu: sekretariat.svt@minedu.sk.
- 17) Bežné výdavky, ktoré boli poskytnuté príjemcovi po 31. júli rozpočtového roka a ktoré nebolo možné použiť do konca príslušného rozpočtového roka, možno použiť do 31. marca nasledujúceho rozpočtového roka v súlade s § 8 ods. 5 zákona č. 523/2004 Z. z. o rozpočtových pravidlách verejnej správy a o zmene a doplnení niektorých zákonov v znení neskorších predpisov (ďalej len „zákon č. 523/2004 Z. z.“). Nepoužitý finančný prostriedok je príjemca povinný vrátiť do 15. apríla na depozitný účet poskytovateľa SK68 8180 0000 0070 0006 3900, Štátna pokladnica, variabilný symbol číslo 1009. O vrátení nepoužitých finančných prostriedkov je príjemca povinný poslať poskytovateľovi písomné

oznámenie.

- 18) Príjemca je povinný predložiť poskytovateľovi do 30. 11. príslušného roka predbežnú informáciu o čerpaní prostriedkov za daný rok a výhľad čerpania týchto prostriedkov do 31. 12. daného roka. Ak príjemca zistí, že nebude schopný vynaložiť oprávnené náklady určené na daný rok vo forme bežných výdavkov v plnom rozsahu, nevyčerpané prostriedky vráti na účet poskytovateľa, č. účtu IBAN SK80 8180 0000 0070 0006 5236, Štátna pokladnica, variabilný symbol číslo 1009 najneskôr do 10. 12. daného roka. Ak príjemca nevyužije možnosť podľa predchádzajúcej vety, prípadné nevyčerpané prostriedky poskytnuté v danom roku vo forme bežných výdavkov je príjemca povinný vrátiť do 31. januára nasledujúceho roka na depozitný účet poskytovateľa v tvare IBAN SK68 8180 0000 0070 0006 3900, Štátna pokladnica, variabilný symbol 1009. O vrátení nevyčerpaných finančných prostriedkov z dotácie je príjemca povinný poslať poskytovateľovi písomné oznámenie.
- 19) V prípade použitia finančných prostriedkov v rozpore s touto zmluvou (ďalej len „neoprávnené použitie“) a/alebo mimo termínu vyúčtovania uvedeného v ods. 11, je príjemca povinný vrátiť neoprávnene použité finančné prostriedky:
 - a) na výdavkový účet poskytovateľa SK80 8180 0000 0070 0006 5236, ak neoprávnené použitie bolo zistené v tom istom rozpočtovom roku, v ktorom mu boli finančné prostriedky poskytnuté,
 - b) na príjmový účet poskytovateľa SK94 8180 0000 0070 0006 3820, ak neoprávnené použitie finančných prostriedkov bolo zistené v ďalších rozpočtových rokoch. V oboch prípadoch je príjemca povinný vrátiť finančné prostriedky do 30 kalendárnych dní od zistenia ich neoprávneného použitia.
- 20) Ak riešenie projektu vyžaduje dodanie tovaru, uskutočnenie stavebných prác alebo poskytnutie služby, príjemca je povinný postupovať pri zadávaní zákaziek na dodanie tovarov, uskutočnenie stavebných prác alebo poskytnutie služieb v súlade so zákonom č. 343/2015 Z. z. o verejnom obstarávaní a o zmene a doplnení niektorých zákonov (ďalej len „ZVO“). Ak sa ZVO nevzťahuje na obstaranie zákazky, príjemca je povinný preukázať hospodárnosť obstarávaných tovarov, stavebných prác a služieb najmä prostredníctvom prieskumu trhu. Príjemca je povinný v cene tovarov, stavebných prác a služieb zohľadniť najlepší pomer kvality a ceny.
- 21) Poskytovateľ má právo zúčastniť sa na procese verejného obstarávania ako člen komisie bez práva vyhodnocovať ponuky. Príjemca je povinný oznámiť poskytovateľovi termín a miesto konania vyhodnotenia ponúk najmenej 3 pracovné dni vopred na e-mailovú adresu: sekretariat.svt@minedu.sk.
- 22) Poskytovateľ je oprávnený preveriť účelnosť použitia dotácie.
- 23) Príjemca je povinný uchovávať všetky dokumenty a doklady, vrátane účtovných dokladov, týkajúcich sa projektu, najmenej počas desiatich rokov nasledujúcich po roku, kedy skončí doba spolufinancovania projektu poskytovateľom.
- 24) Príjemca je oprávnený a zároveň povinný počas realizácie projektu použiť dotáciu na dosiahnutie kvantifikovateľných výsledkov uvedených v Prílohe č. 1 časť B. Príjemca je povinný splniť kvantifikovateľné výsledky podľa Prílohy č. 1 časť B.
- 25) Príjemca je povinný uvádzať na všetkých materiáloch súvisiacich s činnosťou európskej iniciatívy EUREKA (ďalej len „EUREKA“), logo EUREKA a Biotape. Zo sprievodného

textu uvedených materiálov musí jednoznačne vyplývať, že ide o projekt EUREKA a tento sprievodný text musí obsahovať logo Ministerstva školstva, vedy, výskumu a športu Slovenskej republiky ako orgánu, ktorý spolufinancuje projekt.

Čl. 3

Kontrola

- 1) Prijemca umožní Sekretariátu EUREKA, Európskej komisii, Európskemu úradu pre boj proti podvodom a Dvoru audítorov výkon ich kontrolných práv.
- 2) Prijemca berie na vedomie, že poskytnuté finančné prostriedky sú prostriedky zo štátneho rozpočtu Slovenskej republiky. Na použitie týchto prostriedkov, kontrolu ich použitia a ukladanie a vymáhanie sankcií za porušenie finančnej disciplíny sa vzťahujú príslušné právne predpisy (najmä zákon č. 523/2004 Z. z., zákon č. 357/2015 Z. z. o finančnej kontrole a audite a o zmene a doplnení niektorých zákonov v znení neskorších predpisov (ďalej len „zákon č. 357/2015 Z. z.“), zákon č. 431/2002 Z. z. o účtovníctve v znení neskorších predpisov, ZVO).
- 3) Prijemca umožní poskytovateľovi vykonať kontrolu použitia dotácie podľa osobitných predpisov.
- 4) Poskytovateľ je oprávnený vykonať pre svoje potreby finančnú kontrolu podľa zákona č. 357/2015 Z. z. počas trvania zmluvného vzťahu medzi ním a príjemcom, ako aj po jeho ukončení, a to aj v prípade predčasného zániku zmluvy.
- 5) Prijemca je povinný pri výkone kontroly alebo auditu dodržiavať ustanovenia § 20 a § 21 zákona č. 357/2015 Z. z.

Čl. 4

Doba trvania a zánik zmluvy

- 1) Táto zmluva sa uzatvára na dobu určitú, a to odo dňa nadobudnutia účinnosti zmluvy do dňa, kedy poskytovateľ schváli vyúčtovanie dotácie vyhotovené príjemcom v zmysle tejto zmluvy.
- 2) Zmluva zaniká:
 - a) uplynutím doby, na ktorú je uzavretá;
 - b) písomnou dohodou zmluvných strán. Prijemca je v tomto prípade povinný vrátiť nepoužité finančné prostriedky poskytovateľovi najneskôr do 30 kalendárnych dní od ukončenia zmluvy na účet poskytovateľa SK8081800000007000065236;
 - c) odstúpením od zmluvy.
- 3) Poskytovateľ má právo odstúpiť od zmluvy z dôvodov podstatného porušenia zmluvy zo strany príjemcu, za ktoré sa považuje porušenie akejkoľvek povinnosti príjemcu vyplývajúcej z tejto zmluvy.
- 4) Poskytovateľ má tiež právo odstúpiť od zmluvy, ak:
 - a) riešenie projektu má závažné chyby, ktoré boli zistené pri monitorovaní a kontrole riešenia projektu, alebo také chyby, že čas na ich odstránenie by do značnej miery znehodnotil cieľ riešenia projektu;
 - b) dôjde k zrušeniu resp. ukončeniu projektu.

- 5) Odstúpenie od zmluvy je potrebné druhej zmluvnej strane oznámiť písomne. Odstúpením od zmluvy zmluva zaniká doručením písomného prejavu o odstúpení od zmluvy druhej zmluvnej strane na poštovú adresu uvedenú v záhlaví tejto zmluvy.
- 6) Ak poskytovateľ odstúpi od zmluvy z dôvodov podľa ods.3 alebo 4 písm. a) tohto článku, má právo požadovať vrátenie všetkých finančných prostriedkov poskytnutých príjemcovi. Tým nie je dotknuté právo poskytovateľa na náhradu škody.
- 7) Ak poskytovateľ odstúpi od zmluvy z dôvodov podľa ods. 4 písm. b) tohto článku, má právo požadovať vrátenie časti finančných prostriedkov, ktoré boli použité príjemcom po termíne zrušenia resp. ukončenia projektu.
- 8) Príjemca je povinný v súlade s ods. 6 a ods. 7 tohto článku poskytnuté finančné prostriedky vrátiť bez zbytočného odkladu, a to:
 - a) na výdavkový účet poskytovateľa SK 80 8180 0000 0070 0006 5236, ak sa finančné prostriedky vracajú v tom istom rozpočtovom roku, v ktorom boli poskytnuté príjemcovi;
 - b) na príjmový účet poskytovateľa SK 94 8180 0000 0700 0006 3820, ak sa finančné prostriedky vracajú v inom rozpočtovom roku ako v tom, v ktorom boli poskytnuté príjemcovi.

Čl. 5

Sankcie a zodpovednosť za škodu

- 1) Príjemca je povinný dodržiavať ustanovenia zákona č. 523/2004 Z. z. a plniť všetky povinnosti, ktoré mu vyplývajú z tejto zmluvy. Porušenie ustanovení tejto zmluvy alebo zákona č. 523/2004 Z. z. sa považuje za porušenie finančnej disciplíny a sú s ním spojené sankcie uvedené v § 31 zákona č. 523/2004 Z. z.
- 2) Zmluvná strana, ktorá poruší svoju povinnosť z tohto záväzkového vzťahu, je povinná nahradiť škodu tým spôsobenú druhej zmluvnej strane, ibaže preukáže, že porušenie povinností bolo spôsobené okolnosťami vylučujúcimi zodpovednosť.
- 3) Za okolnosti vylučujúce zodpovednosť sa považuje prekážka, ktorá nastala nezávisle od vôle povinnej zmluvnej strany a bráni jej v splnení jej povinnosti, ak nemožno rozumne predpokladať, že by povinná zmluvná strana túto prekážku alebo jej následky odvrátila alebo prekonala, a ďalej, že by v čase vzniku záväzku túto prekážku predvídala.
- 4) Zodpovednosť za škodu sa ďalej spravuje ustanovením § 373 a nasl. zákona č. 513/1991 Zb. Obchodný zákonník v znení neskorších predpisov (ďalej len „Obchodný zákonník“).

Čl. 6

Osobitné ustanovenia

- 1) Všetky práva k výsledkom riešenia projektu sa posudzujú v zmysle § 21 zákona č. 172/2005 Z. z.
- 2) Spôsob využitia výsledkov riešenia projektu sa riadi konzorciálnou zmluvou (zmluva uzavretá medzi partnermi medzinárodného projektu), s účinnosťou od prvého júla 2023.

Medzinárodné konzorcium tvoria:

VITO Irmén GmbH & Co. KG, Nemecká spolková republika

Ústav polymérov SAV, v.v.i., Slovenská republika

Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V., Nemecká spolková republika

Čl. 7

Záverečné ustanovenia

- 1) Akékoľvek zmeny na strane príjemcu, najmä zmena kontaktných údajov, štatutárneho orgánu, bankového účtu je príjemca povinný do 14 dní odo dňa vzniku zmeny písomne oznámiť poskytovateľovi.
- 2) Zmluvné strany sa dohodli, že meniť a dopĺňať túto zmluvu možno len po vzájomnej dohode zmluvných strán formou očíslovaných písomných dodatkov, ktoré sú neoddeliteľnou súčasťou tejto zmluvy. Zmluvné strany sa k návrhu písomného dodatku vyjadria v lehote do 30 dní odo dňa jeho doručenia.
- 3) Vzťahy medzi zmluvnými stranami vyslovene neupravené v tejto zmluve sa riadia príslušnými ustanoveniami zákona č. 172/2005 Z. z., zákona č. 523/2004 Z. z., Obchodného zákonníka a ďalších všeobecne záväzných právnych predpisov.
- 4) Neoddeliteľnou súčasťou tejto zmluvy je Príloha č. 1 a č. 2.
- 5) Táto zmluva je vyhotovená v šiestich originálnych rovnopisoch, z ktorých tri vyhotovenia obdrží poskytovateľ a tri vyhotovenia obdrží príjemca.
- 6) Zmluvné strany po prečítaní tejto zmluvy vyhlasujú, že jej obsahu porozumeli, tento zodpovedá skutočnému prejavu ich vôle a na znak vzájomného súhlasu ju podpisujú.
- 7) Táto zmluva nadobúda platnosť dňom podpisu obidvoma zmluvnými stranami a účinnosť dňom nasledujúcim po dni jej zverejnenia v Centrálnom registri zmlúv.

Príloha č. 1 Časť A: Technická špecifikácia projektu
 Časť B: Ciele, harmonogram a očakávané výstupy projektu
 Časť C: Rozpočet projektu

Príloha č. 2 Konzorciálna zmluva

V Bratislave dňa

V Bratislave dňa

Za poskytovateľa:

Za príjemcu:

.....
Mgr. Daniel Bútora
minister

.....
Mgr. Jaroslav Mosnáček, DrSc.
riaditeľ

PRÍLOHA 1: Technická špecifikácia projektu

A.1 Základné informácie o projekte		
Názov projektu – slovensky	Lepidlá z obnoviteľných zdrojov pre lepiace pásky	
Názov projektu – anglicky	Bio-based pressure sensitive adhesive tape	
Akronym projektu	Biotape	
Odbor výskumu a vývoja	Materiálová chémia	
Charakter projektu	Aplikovaný výskum	
Doba riešenia projektu	Od: 1.7.2023	Do: 1.7.2026
Celkové náklady na projekt (v Eur)	187 500	
Výška spolufinancovania projektu z prostriedkov MŠ VVaŠ SR (v Eur)	150 000	
Podiel spolufinancovania z prostriedkov MŠ VVaŠ SR na celkových oprávnených nákladoch (v %)	80 %	
Zodpovedný riešiteľ projektu (meno, priezvisko, tituly, č. tel., e-mail)	Mgr. Jaroslav Mosnáček, DrSc.; 00421 2 3229 4388; jaroslav.mosnacek@savba.sk	

A.2 Zodpovedná organizácia	Základné údaje o zodpovednej organizácii
Názov organizácie	Ústav polymérov Slovenskej akadémie vied, verejná výskumná inštitúcia
Skrátený názov	Ústav polymérov SAV, v.v.i.
Adresa	Dúbravská cesta 9, 845 41 Bratislava
Samosprávny kraj	Bratislavský
IČO	00586927
Príslušnosť k rezortu	SAV
Typ organizácie	verejná výskumná inštitúcia
SK NACE Rev. 2 (štatistická klasifikácia ekonomických činností)	72190
Štatutárny zástupca (meno, priezvisko, tituly)	Mgr. Jaroslav Mosnáček, DrSc.

A.3 Zoznam riešiteľov

Zoznam riešiteľov priamo sa podieľajúcich na riešení projektu

Meno a priezvisko	Tituly	Pracovné zaradenie	Vek	IČO organizácie	Počet hodín	Poznámka
Jaroslav Mosnáček	Mgr. DrSc.	Vedúci vedecký pracovník	47	586927	900	Vedenie projektu
Gamal Zain	PhD.	Vedecký pracovník	33	586927	1200	Syntéza a charakterizácia
Zuzana Kroneková	Mgr. PhD.	Vedecký pracovník	45	586927	300	Testy biokompatibility
Katarína Mosnáčková	Mgr. PhD..	Vedecký pracovník	40	586927	600	Testovanie vlastností
Sambit Lenka	MSc.	PhD študent	24	586927	1200	Syntéza a charakterizácia
Mária Gurská	Ing.	PhD študent	27	586927	600	Funkcionalizácia polymérov

A.4 Zoznam riešiteľov - súhrn

Ostatní riešitelia	Celkový počet ostatných osôb	1
	Súhrnná kapacita ostatných osôb v hodinách	600
Spolu	Celkový počet zamestnancov	7
	Súhrnná kapacita zamestnancov v hodinách	5400

A5. Spoluriešiteľská organizácia

Do projektu nie je zapojená spoluriešiteľská organizácia zo Slovenska.

B. Ciele, harmonogram a očakávané výstupy projektu

Anotácia projektu

Projekt je zameraný na vývoj lepidiel z obnoviteľných zdrojov pre lepiace pásky. Aby sa zabezpečilo, že vyvinuté materiály budú komerčne konkurencie schopné s existujúcimi materiálmi v reálnom časovom horizonte, dôraz sa bude klásť na materiály odvodené z komerčne dostupných obnoviteľných látok. Vývoj bude zameraný na dva rôzne druhy lepidiel: Po prvé, systém pozostávajúci z roztoku polymérov, ktorý sa aplikuje priamo na pásky s následným odparením rozpúšťadla. Po druhé, systém založený na vytvrdzovaní UV žiarením, kde sa lepidlo naniesie na pásky vo forme živice bez rozpúšťadla a potom sa vytvrdí pomocou UV svetla, čím sa dosiahne zosieťovanie, pričom zostane lepkavý povrch. Oba procesy sa v súčasnosti používajú v priemyselnom meradle, avšak lepidiel z obnoviteľných zdrojov je veľmi málo a v oblasti lepiacich pások nie sú doteraz využívané. V dôsledku zvyšujúceho sa povedomia zákazníkov o udržateľnejších produktoch, nedostatku zdrojov, ako aj potreby priemyslu prejsť na obehové hospodárstvo založené na domácich obnoviteľných zdrojoch, budú takéto produkty ekonomicky dostupnejšie a vysoko ekologické.

Kľúčové slová

Ekologické lepidlá, lepiace pásky, obnoviteľné zdroje

Ciele projektu

Hlavným cieľom o nahradiť lepidlá z polyakrylátov, ktoré sú syntetizované z ropy, vhodnými lepidlami na báze obnoviteľných zdrojov. Ako základ sa použije kyselina itakónová, ktorá je komerčne dostupná a vzhľadom na jej pomerne nízku cenu výsledné produkty môžu byť ekonomicky konkurencie schopné súčasným tradičným lepidlám. Systém pozostávajúci z roztoku polymérov, bude založený na syntéze polyamidoamínov polymerizáciou itakónovej kyseliny alebo jej derivátov s rôznymi diamínmi, ktoré taktiež pochádzajú z obnoviteľných zdrojov. Výsledné polyméry sa budú prípadne postfunkcionalizovať za účelom zvýšenia adhézných vlastností. Druhý systém založený na vytvrdzovaní UV žiarením, bude pozostávať z polyesterov obsahujúcich nenasýtené väzby, ktoré umožnia UV vytvrdzovanie. Následne bude potrebné pripraviť zmesi, buď jedného alebo druhého systému, ktoré budú mať vhodné adhezívne ako aj mechanické vlastnosti potrebné pre aplikáciu na pásky. Zapojenie industriálneho partnera, ktorý vyrába lepiace pásky pre rôzne segmenty priemyslu a definovanie požiadaviek na vlastnosti, cenu a možnosti objemu výroby na začiatku projektu umožní vhodne zvoliť aplikovateľnosť vyvinutých lepiacich pások či už v stavebníctve, automobilovom priemysle, alebo biomedicíne.

Harmonogram riešenia projektu

Názov etapy	Začiatok	Koniec	Ciele	Výstupy etapy
Definovanie vlastností a špecifikácií pre lepidlá	1.7.2023	31.7.2023	Definícia požiadaviek na vlastnosti lepidiel pre lepiace pásky minimálne pre tri rôzne oblasti použitia vzhľadom na objem výroby, cenu a mechanické vlastnosti.	Požiadavky na vlastnosti lepidiel pre lepiace pásky
Syntéza rozpustných lepidiel	1.8.2023	31.7.2025	Príprava polyamidoamínov z obnoviteľných monomérov a optimalizácia ich štruktúry za účelom	Lepidlá z obnoviteľných zdrojov

			dosiahnutia adhezívnych vlastností.	
Syntéza lepidiel vytvrdzujúcich UV svetlom	1.8.2023	31.7.2025	Príprava predpolymérov pre UV-vytvrdzovanie na báze polyesterov odvodených od kyseliny itakónovej a iných obnoviteľných monomérov.	UV vytvrdzovateľné polyestery z obnoviteľných zdrojov s adhezívnymi vlastnosťami.
Optimalizácia zloženia a aplikácia lepidiel na pásy	1.1.2024	31.12.2025	Príprava zmesí polyamidoamínov alebo polyesterov s vlastnosťami vhodnými pre aplikáciu na pásy.	Lepidlá s vlastnosťami vhodnými pre aplikovateľnosť na lepiace pásy
Testovanie a vyhodnocovanie lepiacich pásov	1.3.2024	28.2.2026	Vývoj lepiacich pásov na báze rozpustných polyamidoamínov a UV vytvrdzovateľných polyesterov pre rôzne aplikácie.	Lepiace pásy s adhezívnou vrstvou z obnoviteľných polymérov
Koordinácia projektu a manažment	1.7.2023	30.6.2025	Koordinácia a vedenie jednotlivých častkových úloh, vzájomná komunikácia, zdieľanie ako aj diseminácia výsledkov.	Čiastkové a finálna správa z riešenia projektu.

Očakávané výstupy projektu				
Kategória	Výstupy	1.rok	2.rok	3.rok
Publikácie	2 publikácie v IF časopisoch so získaných výsledkov		1	1
Chránený výstup	1 patent alebo úžitkový vzor			1
Spolupráca	Medzinárodná spolupráca	1		
Vzdelávanie	Ukončená 1 dizertačná práca priamo súvisiaca s riešením projektom			1
Popularizácia	Článok v novinách alebo časopise propagujúci vyvinuté adhezíva			1
Prototyp	Prototyp lepiacej pásy s adhezívom na báze obnoviteľných polymérov			1

C1. Rozpočet projektu – celkový

Rozpočet projektu	Vlastné prostriedky	Dotácia zo ŠR	Spolu
Celkové oprávnené náklady	37500	150000	187500
Rok 2023	Vlastné prostriedky	Dotácia zo ŠR	Spolu
Bežné náklady	6250	18000	24250
Bežné priame náklady celkom	6250	11750	18000
Mzdové náklady	4630	6000	10630
Zdravotné a sociálne poistenie	1620	2100	3720
Cestovné výdavky		1500	1500
Materiál		1650	1650
Odpisy			
Služby		500	500
Energie, vodné, stočné a komunikácie			
Bežné nepriame náklady		6250	6250
Kapitálové výdavky		7000	7000
Rok 2024	Vlastné prostriedky	Dotácia zo ŠR	Spolu
Bežné náklady	12500	35000	47500
Bežné priame náklady celkom	12500	22500	35000
Mzdové náklady	9260	12000	21260
Zdravotné a sociálne poistenie	3240	4200	7440
Cestovné výdavky		1500	1500
Materiál		4000	4000
Odpisy			
Služby		800	800
Energie, vodné, stočné a komunikácie			
Bežné nepriame náklady		12500	12500
Kapitálové výdavky		15000	15000
Rok 2025	Vlastné prostriedky	Dotácia zo ŠR	Spolu
Bežné náklady	12500	38000	50500
Bežné priame náklady celkom	12500	25500	38000
Mzdové náklady	9260	12000	21260
Zdravotné a sociálne poistenie	3240	4200	7440
Cestovné výdavky		2500	2500
Materiál		5500	5500
Odpisy			
Služby		1300	1300
Energie, vodné, stočné a komunikácie			

Bežné nepriame náklady		12500	12500
Kapitálové výdavky		12000	12000
Rok 2026	Vlastné prostriedky	Dotácia zo ŠR	Spolu
Bežné náklady	6250	25000	31250
Bežné priame náklady celkom	6250	18750	25000
Mzdové náklady	4630	6000	10630
Zdravotné a sociálne poistenie	1620	2100	3720
Cestovné výdavky		5000	5000
Materiál		4000	4000
Odpisy			
Služby		1650	1650
Energie, vodné, stočné a komunikácie			
Bežné nepriame náklady		6250	6250
Kapitálové výdavky		0	0

D. Čestné vyhlásenie štatutárneho zástupcu

Ja, dole podpísaný Mgr. Jaroslav Mosnáček, DrSc., štatutárny zástupca záväzne vyhlasujem, že:

- Všetky údaje obsiahnuté v dokumentácii projektu sú pravdivé
- Projekt bude realizovaný v zmysle predloženého obsahu
- Zodpovedná organizácia súhlasí s pravidelnou finančnou kontrolou projektu
- Zodpovedná organizácia bude archivovať všetky účtovné dokumenty súvisiace s realizáciou projektu v zmysle platnej legislatívy SR
- Dávam súhlas na výkon kontroly príslušným kontrolným orgánom MŠVVaŠ SR
- Zodpovedná organizácia bude dodržiavať legislatívu Európskej únie a platnú legislatívu SR
- Na riešenie projektu nebol žiadaný ani poskytnutý finančný príspevok od iného poskytovateľa

Som si vedomý možných následkov a sankcií, ktoré vyplývajú z uvedenia nepravdivých alebo neúplných údajov. Zaväzujem sa bezodkladne písomne informovať o všetkých zmenách, ktoré sa týkajú uvedených údajov a skutočností.

Podpis štatutárneho zástupcu príjemcu a pečiatka

.....

Miesto: Bratislava

Dátum:

DocuSign Envelope ID: 7D11B235-2814-47D7-8AB9-FD9FF830BCE9

Cooperation Agreement regarding the »BioTape« Joint Project

– COOPERATION AGREEMENT

The following companies and institutions

VITO Irmén GmbH & Co. KG | Mittelstr. 74, 53424 Remagen

Ústav polymérov SAV, v. v. i. | Dúbravská cesta 9, 845 41 Bratislava 45, Slovakia (hereinafter referred to as the »Polymer Institute SAS«)

and

Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. | Hansastraße 27c, 80686 Munich

for services of its

Fraunhofer Institute for Wood Research | Riedenkamp 3, 38108 Braunschweig

hereinafter referred to as the »Partners«

hereby enter into the following Agreement on the collaborative implementation of the

»BioTape«

joint project:

Cooperation Agreement regarding the »BioTape« Joint Project

The Partners intend to work together to implement the joint project which is being funded by the Federal Ministry of Education and Research [Bundesministerium für Bildung und Forschung (BMBF)] (hereinafter referred to as the »Funding Authority«). For this purpose, each Partner has applied for its own grant. The coordination of the joint project will be carried out by Fraunhofer.

1

Subject matter of the Agreement

Subject of this Agreement are the terms of the collaboration on the

»BioTape«

joint project (hereinafter referred to as the »Joint Project«).

The tasks to be performed by each Partner are specified in their respective funding grant. Each Partner is solely responsible for the performance of its own tasks. The description of the Joint Project – as far as it relates to the nature, scope and schedule of the Partners' task – is enclosed hereto as Annex A (»Joint Project Description«) and is an integral component of this Agreement. In the event of any inconsistencies, this Agreement shall prevail over its Annexes.

2

Term

The Joint Project shall begin on **July 1st, 2023** and shall end upon delivery of the final report to the Funding Authority.

3

Coordination

3.1

The coordinator shall work towards ensuring that the tasks are performed pursuant to the work plan and schedule in the Joint Project Description. If deviations thereto occur, the coordinator shall notify the Partners thereof as soon as possible and shall propose measures to overcome the issues that have arisen.

3.2

The coordinator shall arrange the Partner meetings required for implementation of the Joint Project, convene the meetings with sufficient notice thereof, chair the meetings, and is responsible for issuing and sending out the minutes of the meetings.

3.3

Each Partner will provide the coordinator with the project documents needed by the coordinator to perform his/her tasks as coordinator, in addition particularly forwarding them to the Funding Authority.

3.4

No Partner shall be authorized to deliver binding legal declarations, enter into legally binding agreements or accept payments on behalf of any other Partner, without prior written consent of that Partner.

4

Work results / Rights of use

4.1

In regards to the subject of this Agreement, the Partners shall advise one another of their respective inventions and the industrial property rights applied for or granted thereto, know-how or copyright-protected works, including software, achieved in the course of implementing the Joint Project (hereinafter collectively referred to as »Work Results«) and about the progress of work, and the Partners shall exchange interim and final reports.

Cooperation Agreement regarding the »BioTape« Joint Project

4.2

The Partners shall grant each other a non-exclusive, non-transferable right of use at no charge for Work Results achieved solely by the respective Partner for the duration and implementation of the Joint Project. For any further usage, each Partner shall be granted upon request, which must be asserted in writing to the respective Partner within one year after the end of the Joint Project, a non-exclusive, non-transferable right of use at standard market rates and at terms and conditions to be agreed upon prior to any intended use.

When assessing the standard market terms, the necessary contributions made by the concerned Partners in the context of the Joint Project for the respective Work Result shall be taken into account; compared to the terms for uninvolved parties, the relevant Partner may be given a corresponding discount for such contributions.

Insofar as no request for further use was asserted within the year-long deadline or, following a timely request, no agreement was able to be reached about the terms and conditions of use, then each Partner shall be free in the commercial exploitation of its Work Results (specialization within the meaning of Art. 3 (2) sentence 2 R&D-BER).

Software shall be provided in object code only.

4.3

The joint inventions, which result from implementation of the Joint Project (i.e. inventions in which employees of several Partners are involved and for which the individual Partners cannot file separate industrial property rights applications for their share of the invention), shall be owned jointly by these Partners in proportion to their share of the invention.

The Partners involved in joint inventions shall agree upon the registration (including management thereof), maintenance and defense of industrial property rights to the joint invention, as well as the associated costs. These Partners shall be entitled to use such inventions as well as industrial property rights applied for or granted thereto for the term thereof like their own and to grant non-exclusive licenses thereto, without – subject to the following sentence – any financial adjustment having to be made. Insofar as a research organization within the meaning of the EU Framework for State aid for research and development and innovation (2022/C414/01) is involved in a joint invention alongside a company, the Partners involved will, with regard to No. 2.2.2 of the EU Framework, carefully evaluate contributions, document the result and compensate financial benefits based on the mutual usage and licensing rights, if necessary through an additional compensation in a separate agreement, in order to ensure that the Partners in the commercial sector are not granted any indirect state aid due to the collaboration under this Agreement.

The rights of the other Partners shall be determined according to Section 4.2.

For copyright protected works, which are jointly created during the implementation of the Joint Project by employees of several Partners (including software) as well as jointly created know-how, the provisions of this Section 4.3 – to the extent to which they may be applicable – shall apply accordingly.

4.4

The Partners shall grant one another, upon request, a non-exclusive, non-transferable, non-sublicensable right of use at no charge to inventions and the industrial property rights applied for or granted thereto, know-how and copyright-protected works, including software, existing at the time of commencement of this Agreement which were incorporated by them into the Joint Project (hereinafter collectively referred to as »Background IP«), for the duration and implementation of the Joint Project, provided the Partners are legally able to do so and to the extent this is necessary for the implementation of the Joint Project.

For any further usage, to the extent that it is imperative for the exploitation of a Partner's own Work Results, the other Partners shall, upon request, which must be submitted in writing to the respective Partner within one year after the end of the Joint Project, grant this Partner a non-exclusive, non-transferable, non-sublicensable right of use for a fee at standard market terms, provided they are legally

Cooperation Agreement regarding the »BioTape« Joint Project

able to do so. The details of this arrangement shall be agreed upon in writing by the relevant Partners prior to commencing any such further usage of the Background IP.

Software shall be provided in object code only.

4.5

The rights of use granted pursuant to this Agreement shall only include those acts of use which do not constitute acts detrimental to qualification as a novelty.

Neither the granting of rights of use pursuant to this Agreement nor the exercise thereof should establish any right based on prior use, e.g. pursuant to § 12 of the German Patent Act [*Patentgesetz*, »PatG«] or pursuant to corresponding provisions of patent laws of other countries. In this respect, no Partner shall invoke a right based on prior use.

4.6

If any work to be performed by a Partner is performed by a third party, then this Partner shall ensure that the Work Results achieved thereby shall be provided to the other Partners and rights of use are granted thereto pursuant to the terms of this Agreement.

4.7

The Funding Authority's rights to use the Work Results pursuant to Section 3.4.2 of the Auxiliary Terms and Conditions for Grants on Cost Basis to Companies in Industry for R&D Projects (NKBF 2017) remain unaffected by the provisions set out in this Section 4. In the event of separate license agreements with regard to Work Results, the Partners shall agree on appropriate terms in order to ensure this precedence of the Funding Authority.

4.8

The Polymer Institute SAS shall ensure that for purposes of discharging the tasks it has assumed under this Agreement, it will engage only those staff members who have entered into the "Supplemental Agreement on the Waiver of the Freedom of Publication pursuant to § 42 No. 1, No. 2 of the Law on Employees' Inventions [*Arbeitnehmer-Erfindungsgesetz (ArbnErfG)*]" (as provided in Annex B) with the Coordinator before commencing their work on the project. The same applies if the Polymer Institute SAS engages additional or new staff members. The Coordinator shall without undue delay forward to the other Partners copies of all the Supplemental Agreements concluded in this project.

5 Confidentiality

5.1

Each Partner shall use all information of the other Partners that is classified as confidential exclusively for the Joint Project, shall keep it confidential and shall not provide it to third parties without the prior written consent of the relevant Partner during the Joint Project and for a period of five (5) years after the end of the Joint Project. This obligation shall not apply to information which

- was known to the public or was generally available prior to the notification to the receiving Partner or
- becomes known to the public or generally available after the notification to the receiving Partner without that Partner being involved or at fault or
- the receiving Partner was already aware of at the time of receipt of the information or
- is information that was disclosed or made available to the receiving Partner at any time by a third party without imposition of any obligation of confidentiality or
- was developed by an employee of the receiving Partner without knowledge of the information.

Cooperation Agreement regarding the »BioTape« Joint Project

Should the disclosure of confidential information be mandated by order of a government authority or court, then the receiving Partner shall be authorized to disclose the information in this respect to the authority or court. The receiving Partner shall without undue delay inform the disclosing Partner of any such order insofar as this is legally permissible.

5.2

The internal dissemination of confidential information by a Partner shall be permitted only insofar as this is necessary for the Joint Project (on a need-to-know basis) and provided it can be ensured that the only employees who receive this information are employees who have been made subject, to the extent legally possible, to the same confidentiality requirements.

5.3

The receiving Partner further agrees not to reverse engineer the confidential information of the disclosing Partner without the prior written consent of the disclosing Partner, unless such confidential information is generally accessible by the public or unless reverse engineering is legally allowed pursuant to sections 69d, 69e German Act on Copyright and Related Rights, section 11, no 2 German Patent Act, section 12, no 2 German Utility Model Act, section 10a, para 1, no 2 German Plant Variety Protection Act or section 6, para 2, no 2 German Semiconductor Protection Act.

6

Publications

6.1

Each Partner is entitled to issue publications that do not contain any confidential information or Work Results of other Partners without the consent of the other Partners.

6.2

Publications containing confidential information and/or Work Results of another Partner shall require prior written consent of that Partner (email is sufficient) and must be submitted to that Partner prior to the publication. With respect to joint Work Results, consent may not be unreasonably withheld or delayed.

6.3

Any disclosure or notification obligations by the Partners to the Funding Authority shall remain unaffected.

7

Liability/ Warranty

7.1

No Partner shall warrant or be liable for the correctness, completeness, exploitability, freedom from defects or freedom from third party industrial property rights of Work Results, Background IP and other information transferred in the context of this Agreement. The foregoing limitations of liability shall not apply in cases involving intentional (*Vorsatz*) acts or omissions.

7.2

Claims of the Partners against one another, against their managing employees and legal representatives, vicarious agents and assistants for compensation of damages based on breaches of duty and tortious acts are excluded, provided they are not based on intentional acts or omissions or on gross negligence (*grobe Fahrlässigkeit*). Liability for indirect damage and consequential damages is excluded, unless such damages were caused by intentional acts or omissions. Section 7.1 shall remain unaffected.

7.3

For third party claims, the Partners shall be liable among themselves (inter se) in accordance with their share of fault.

Cooperation Agreement regarding the »BioTape« Joint Project

8

Notice of termination/ Termination

8.1

Each Partner may terminate its involvement in the Joint Project upon three (3) months' notice, but only for good cause (*aus wichtigem Grund*). Good cause shall exist particularly if continued work has become unreasonable or the Partner's grant is subsequently reduced significantly or revoked. The notice of termination must be sent to all Partners and to the Funding Authority in writing. The terminating Partner shall withdraw from the Joint Project when the termination takes effect.

8.2

If court orders are issued against the assets of a Partner in connection with any instituted insolvency proceedings, then this Partner shall withdraw from the Joint Project at that time, without requiring any notice of termination. The same shall apply if any Partner has applied for insolvency proceedings or comparable legal proceedings with regard to its own assets, but such proceedings were not instituted due to lack of assets. As soon as a Partner learns of any application for any of the proceedings specified in the foregoing two sentences, that Partner is obligated to inform the other Partners thereof without undue delay.

8.3

In the event of the withdrawal of a Partner pursuant to Section 8.1 or 8.2

- this Agreement between the other Partners shall remain in effect and these Partners shall continue the Joint Project subject to the provision of Section 8.4;
- the rights granted to the withdrawing Partner pursuant to Section 4 shall terminate, with the exception of its rights pursuant to Section 4.3;
- the withdrawing Partner shall remain subject to the obligation of confidentiality pursuant to Section 5;
- Section 6 shall continue to apply;
- the rights of use granted to the other Partners through this Agreement shall remain unaffected;
- the duties of the withdrawing Partner may be fulfilled by one of the existing Partners or a new partner in consultation with the remaining Partners and the Funding Authority.

The duties of the other Partners pursuant to Section 4 of this Agreement shall apply with respect to the withdrawing Partner only for Work Results which were achieved prior to the effective date of the termination.

8.4

If the remaining Partners mutually determine that the aim pursued by the Joint Project cannot be achieved and thus the basis for this Agreement no longer applies, then the remaining Partners shall agree with the Funding Authority on future steps and, if necessary, shall enter into a separate agreement in that regard.

9

Miscellaneous

9.1

This contract shall be signed in writing or in electronic form within the meaning of Section 127 III of the German Civil Code (BGB) with legal effect (e.g. by using an electronic signature platform like DocuSign, AdobeSign etc.). There shall neither be an exchange of handwritten original signatures nor a subsequent qualified electronic signature or certification according to § 127 II, III BGB in the case of electronic

Cooperation Agreement regarding the »BioTape« Joint Project

signature. This provision applies also for changes or additions to this Agreement as well as if the Partners intend to waive the agreed form.

9.2

This Agreement is subject to the funding of all Partners by the Funding Authority. If this Agreement contains any gaps, the grant approval terms and conditions shall apply supplementary. In the event of any inconsistency of the grant approval terms and conditions and the conditions of this Agreement, the Partners shall, immediately after learning thereof, consult on an amendment of this Agreement.

9.3

Should any provision of this Agreement be or become invalid or unenforceable, this shall not affect the validity and enforceability of the rest of this Agreement. The Partners are obligated to replace the invalid and unenforceable provision with a valid and enforceable one that reflects the sense and purpose of the invalid and unenforceable provision. The same shall apply accordingly in the event of any unintentional gap in the provisions.

9.4

This Agreement is governed by the laws of the Federal Republic of Germany without reference to its conflict of law provisions.

9.5

Each Partner shall comply with the applicable export law provisions.

9.6

No Partner may transfer this Agreement or individual rights or obligations under this Agreement to third parties without the written consent of the other Partners. This shall not apply to the extent that a Partner merely assigns partial performances of the Joint Project to a third party under a subcontract.

10

Effective date

The present Agreement shall enter into force as of the date of its signature by all Partners. The Partners take note that pursuant to relevant provisions of Section 5a of Act No. 211/2000 Coll. on Free Access to Information and Amendments of Some Acts (The Freedom of Information Act) as amended, this Agreement is a mandatorily published contract, which is published in the Central Register of Contracts of the Government Office of the Slovak Republic. This Agreement shall take effect on the day following the day of its publication in the Central Register of Contracts of the Government Office of the Slovak Republic. The Polymer Institute SAS undertakes to ensure the publication of this Agreement without undue delay after its signing by all Partners. If this Agreement takes effect after the July 1st, 2023, the start of the Joint Project, it shall have binding effect to the start of the Joint Project, i.e. to the July 1st, 2023.

Annexes

Annex A: Joint Project Description

Annex B: Declaration on the Waiver of the Freedom of Publication pursuant to § 42 No.1, No.2 of the Law on Employees' Inventions [*Arbeitnehmer-Erfindungsgesetz (ArbnErfG)*]

-- Signature pages follow --

Cooperation Agreement regarding the »BioTape« Joint Project

26.07.2023
Remagen,
VITO Irmen GmbH & Co. KG

Dr.-Ing. Marcus Weber

Head of R&D

Cooperation Agreement regarding the »BioTape« Joint Project

Bratislava, 26.07.2023
Ústav polymérov SAV, v. v. i.

Jaroslav Mosnáček, DSc.

Director

Cooperation Agreement regarding the »BioTape« Joint Project

München, 26.07.2023
Fraunhofer-Gesellschaft e.V.

Daniel Fürst
Teamleitung Werkstoffe, Materials

Maria Marotta
Juristische Referentin

Cooperation Agreement regarding the »BioTape« Joint Project

Annex A

Joint Project Description

I. Main objective of the project

The main objective of this project is to develop bio-based pressure sensitive adhesives (PSA) for adhesive tape applications. To ensure that the developed materials will be commercially competitive with existing materials on a realistic timeline, the focus will be placed on materials derived from commercially available bio-based building blocks. Two different kinds of PSA will be developed: Firstly, a solvent-based system, where the PSA is applied on a substrate as a solution, followed by the drying by evaporation of the solvent. Secondly, a UV-curable system where the PSA is applied as a solvent-free resin on a substrate. Such a product is cured by means of UV-light, which results in the polymerization and crosslinking of the PSA, leaving a tacky surface behind. Both processes are currently used on an industrial scale, however bio-based materials in this field are scarce. Due to increasing customer awareness towards more sustainable products, resource scarcity, as well as the need of the industry to move to a more local and bio-based circular economy, products derived from renewable resources are of high ecological, as well as economical interest.

As a first product, one-sided adhesive tapes will be targeted, as their mechanical properties are not very demanding and a successful marketing of a bio-based version of these types of products is very likely. In a second step, more demanding products will be targeted, where regulatory demands may limit the usability of renewable raw materials. Examples for such products can be found in medical and transportation markets.

The WKI will synthesize bio-based unsaturated polymer resins that can be used as prepolymers for UV-curing PSA applications. The aim is to formulate these with other bio-based reactive diluents to achieve a high overall content of renewable feedstock in the final PSA.

The PI SAS will synthesize bio-based polyamidoamines from itaconic acid and diamines with longer aliphatic chains or functional groups, which can be further modified in order to achieve adhesive properties for PSA applications.

Vito Immen will define different use-cases of pressure sensitive adhesives with low, medium and high requirements, giving the following polymerization and formulation-work a valid basis. After the polymerization, Vito will characterize and try to improve the mechanical properties by improved polymerization and then followed by formulation experiments. With those iterations and improvements coating experiments will be carried out, giving a basis for an additional economical evaluation of the products.

1.1. Context to the aims of the funding policy

The project will focus on the replacement of petrochemical building blocks with monomers from renewable resources. This results in significant reduction of greenhouse gas emissions and local access to raw materials from agricultural crops and agricultural side streams. The reduction of greenhouse gases, as well as the decoupling of economic growth from resource use are two of the three key goals of the European Green Deal.¹ These goals will be addressed by the project described herein. Furthermore, the development of bio-based high-tech materials significantly contributes to a local circular bioeconomy, which has priority in both the German and European Research Strategy. For example, the reduction of the dependence on non-renewable resources and the sustainable management of natural resources are two of five goals from the European bioeconomy strategy.

Beyond the bioeconomy strategy, the German governments also see Green Chemistry as an important tool to a sustainable economy. This can be seen in the support for different Green Chemistry initiatives, such as the ISC3 in Germany. By using benign reagents and transformations that are suitable for industrial use, this project will therefore make an important contribution to both bioeconomical and green chemistry aspects.

¹ A European Green Deal – Striving to be the first climate-neutral continent, [A European Green Deal \(european.eu\)](https://european-council.europa.eu/media/en/press-communications/1234567890/attachment/1234567890.pdf).

Cooperation Agreement regarding the »BioTape« Joint Project

1.2. Scientific and/or technical work goals

Within the project, new pressure sensitive adhesives based on renewable raw materials will be synthesized and tested after coating by use of current solvent-based technologies and modern, energy-efficient and solventless UV-processes. Particular attention is paid to the practical availability of raw materials and commercial aspects, as the experience of recent years shows that these are the most limiting factors that contradict a timely market launch. Although most customers appreciate more sustainable products, they are hardly willing to pay a significantly higher price for it. This willingness is most likely to be found in the construction sector, which is why VITO products, which are often used in the construction sector, are promising candidates for gradual substitution for a corresponding approach.

The project will demonstrate that the polymer resins derived from itaconic acid are able to form adhesive products with a low T_g in compliance with the Dahlquist criterion. This will be done by either the use of solvent-based or UV-curing polymer resins both derived from itaconic acid. This process reduces the use of critical solvents and increases the used material from about 50% to 100%. In addition, the energy balance of these products will be significantly cheaper, which is why the greater opportunities are seen here in the long term.

For the Fraunhofer WKI, the main technical and scientific work goals are the synthesis of bio-based UV-curing polyesters that can be used as binder resins for PSAs. Here it is important to obtain materials that will retain a sticky surface after UV-curing.

For Vito, the main goals are to replace high-performance pressure sensitive adhesives from petrochemical sources, such as polyacrylates with suitable pressure sensitive adhesives on the basis of renewable raw materials. This will significantly contribute towards a more sustainable construction industry.

II. State of the Art

Adhesives made from renewable sources have been known since ancient times. Few examples are glue from animal bones, fish glue, and vegetable adhesives. But during the industrialization synthetic adhesives came into the focus. Because they can be better tuned to certain properties and the junction can be much stronger. In order to combine good properties with sustainability there is an effort to substitute the crude oil-based chemicals by renewable alternatives. For example, epoxy resins have been made from renewable sources.¹ Also bio-based adhesives from soybean oil have been reported.² In addition, a comprehensive review article in the field of bio-based PSAs was recently published.³ So far, the itaconic acid-based adhesives were made by copolymerization with other vinyl monomers. There is only one work describing synthesis of polyamidoamine from itaconic acid and diethylenetriamine for the purpose of adhesives application.⁴ In that case the polyamidoamine was postfunctionalized by epichlorohydrin and used as an additive to soy-based adhesives. It is expected that the selection of more appropriate diamines could directly produce polyamidoamines with adhesive properties, similarly as observed for MBL.

The main technical challenge will be to obtain prepolymers derived from itaconic acid that will show sufficient adhesion properties needed for PSA. Once the renewable pressure sensitive adhesives (PSA) based on poly(amido amine)s from itaconic acid will be developed, there is no technical challenge expected since the production and application of PSA on tapes is a well-managed process in VITO.

To date, pressure sensitive adhesives for tape applications are almost exclusively made from petrochemical feedstock. For these products a wide range of properties are known, tailor-made for each respective application. As far as bio-based examples are concerned, there are only very few commercial examples known. For example, the company TOYO CHEM (www.toyo-chem.com) provides a series of partially bio-based PSA made from urethane or acrylic resins. Furthermore, Ecosynthetix, also provides a PSA for sticker application (<https://ecosynthetix.com/our-biochemicals/ecostix>) based on bio-derived acrylates. However, in this case the exact bio-content is not given on the website and both classes of PSA are not optimized for tape applications. Furthermore, to the best of our knowledge no UV-curing PSAs derived from renewable resources are commercially available.

Therefore, new bio-based PSAs for tape applications, both solvent-based and UV-curing are of high commercial interest and would exhibit a big market potential.

To date, no comparable products are known which have pressure-sensitive adhesive properties. A patent search showed that itaconic acid has been used in some adhesive applications. A list of the patents found can be seen in the attachments. For example, the US patent US000005234972A describes a dental adhesive. For this, difunctional esters of itaconic acid are copolymerized with

Cooperation Agreement regarding the »BioTape« Joint Project

other acrylated monomers by means of thermal curing in the presence of peroxides. The US patent US000005560796 on the other hand described the use of itaconic acid in a UV-curing application for adhesives sheets. However, only monomeric itaconic acid is being used as an additional tackifier and not as binder. The other examples only describe the co-polymerization of itaconic acid with other acrylic monomers to obtain polyacrylates.

Our application, on the other hand, is considerably different from what has been described in the patent literature. In the course of the project will synthesize polymer resins derived from itaconic acid and other bio-based monomers, that then will be converted into the PSA by either evaporation of the solvent or UV-curing. Thus, to the best of our knowledge there is no prior art in the patent literature that will prevent the envisaged exploitation of the project results.

Therefore, the targeted products will be new developments and can be an alternative to existing products. Ideally, the mechanical properties of the new products are almost indistinguishable from the existing products and the raw material costs are comparable to the previous products.

II.1. Previous Work

Fraunhofer Institut für Holzforschung - Wilhelm-Klauditz-Institut (WKI)

The department of binder and coatings of the Fraunhofer WKI develops polymer resins for coatings application, such as wood coatings, printing inks and adhesives. A focus is placed on bio-based building blocks to obtain more sustainable materials. In this field we are conducting direct contract research, but also joint research projects with academic, as well as industrial partners. The project leader Dr. Tobias Robert has an experience of almost 10 years in the initiation and management of national, as well as international research projects with the participation of both academic, as well as industrial partners.

Our department is active in the field of binder resins for coatings applications. The focus is placed on wood coatings, printing inks, adhesives and materials for additive manufacturing. The industrial enterprises we are working with lie within the same sectors with an addition of the polymer resin industry.

The Fraunhofer WKI has a sound expertise in the synthesis of bio-based polymer resins. Dr. Tobias Robert focused on the synthesis of UV-curing resins for printing inks and materials for additive manufacturing.⁵⁻⁹

Based on this expertise, we will develop new UV-curing resins that can be used as pressure sensitive adhesives for tape applications. By varying the co-monomers, tacky PSA with a low TG can be obtained after curing of the materials with a UV-light source.

VITO Irmen GmbH & Co KG

VITO is a small (SME) producer of pressure sensitive articles and products with about 97 employees and a turnover of ~19 M€/a. We formulate, coat and convert different tape products based on adhesives made from rubber, acrylics, EVA and polyamides. With those adhesives, which come as hotmelts, dispersions, solvents or as UV-curable products, we provide our customers tailored solutions ranging from single sided to double-sided, from removable to permanent products with high mechanical resistance. For those products we use a broad range of carrier materials like paper, PET and PE-Foil, PE-, PVC-, rubber and PU-foam, cork, aluminum and copper, which enables us to gain access to a wide market of performance tapes. As there is a high and fast increasing need in the industry for sustainable solutions, we are already working for more than 3 years on "greener" tapes, using raw materials from renewable sources. So far, we made good progress regarding the carrier-materials, but in terms of the adhesives, in Europe there is a lack of adequate solutions. So far, VITO has not been working in internationally funded R&D-projects, but we develop products together with our customers from all over Europe and our head of R&D (Dr.-Ing. Marcus Weber) was working in a couple of funded R&D-projects before.

VITO is very capable in product-range for the building industry. Our products often provide very good insulation and protection properties, which reduces energy consumption and increases the lifespan of a building or construction. One big in volume product from VITO is "Vitokork". It is made from renewable sources, which our customers use as a separation material for glass-tiles during transportation. Another high-volume product is self-adhesive equipped PU-foams. They are used in the construction of lightweight halls, where they provide an air-tight spacer between two lightweight elements. Another main field we are working in are electrodes for medical purposes. Our PE-foam is therefore equipped with biocompatible adhesives, which show high adhesion to skin. Those electrodes can be used for monitoring (EKG) or surgery (electro-cauterisation).

VITO will define the goals of the planned adhesive development and help the project-partners to adjust the properties to reach those aims. Therefore we can modify existing formulations for example by

Cooperation Agreement regarding the »BioTape« Joint Project

addition of crosslinkers (i.e. aziridine, isocyanate, titanacetylacetonate) to increase the shear-resistance or add different resins to improve the adhesives peel and tack-values. This can be done in lab- and production scale at VITO. Finally, VITO will perform mechanical characterization and produce the products in lab and production scale.

III. Work plan**III.1 Resource planning and milestones**

In the following, the work packages, deliverables and milestones are described

WP1 Definition and properties and specifications (all, Month 1)

In this first step properties of the envisaged bio-based PSA will be defined, such as targeted tack, shear, peel and rheological properties like Tg, Tx and the minimal application temperature (given by the Dahlquist-Criterion).

D1.1: Definition of the material properties of the bio-based PSA

D1.2: Definition of 6 test-methods to be used (Peel, Tack, Shear, SAFT, rheology, coat-weight)

M1: Final material definitions of the PSA (M1)

WP2 Synthesis and characterization of solvent-based PSA (PI SAS, Month 2-25)

Polyamidoamines with adhesive properties for PSA application will be synthesized from itaconic acid, or its derivatives, and renewable diamines with various lengths of alkyl chain. Postfunctionalization will be applied with the aim of improvement of adhesive properties.

Milestones:

D2.1. First series of bio-based polyamidoamines will be prepared for evaluation of their applicability as PSA for tapes. (M7)

D2.2. Series of postfunctionalized polyamidoamines with improved adhesive properties will be prepared for evaluation of their applicability as PSA for tapes (M16)

D2.3 Higher quantities of the selected polyamidoamines will be synthesized. (M25)

M2.1. Providing of 2-5 grams of polyamidoamines with adhesive properties for PSA tapes (25)

WP3 Synthesis and characterization of UV-curable PSA (WKI, Month 2-25)

Polyesters derived from itaconic acid and other bio-based monomers will be synthesized to obtain prepolymers for UV-curing PSA applications. The focus will be placed on optimization of the adhesion properties.

D3.1 Synthesis of a first series of bio-based UV-curing polyesters with PSA-properties (M9)

D3.2 Optimization of the polyester towards PSA for tape applications (M18)

D3.3 Synthesis of larger quantities (2-5 kg) of suitable polyester for applications tests (M25)

M3.1 Polyesters synthesized exhibit properties needed for PSA-applications (M15)

M3.2 Synthesis on larger scale possible (M25)

WP4 Formulation and application of PSA on tapes (Vito, PI SAS, WKI, Month 7-31)

When starting with a PSA formulation, the first step is to make sure that the product is a "PSA", showing the necessary balanced visco-elastic mechanical behavior. When, what is very likely to happen, the product is too hard or stiff for the required balanced properties, the addition of different plasticizer, tackifier, crosslinker, hard or soft-block oligomer can tailor the mechanical properties in the designated target. Those steps require miscibility between the used raw-materials in liquid and "solid" state. Even a partial immiscibility will have negative effects on the mechanical properties of the final product. So the first experiments will regard the miscibility and the properties of the resulting products. Then we will continue with the fine-tuning formulation with addition of the needed formulation-parts.

D4.1: Mixtures (formulations) are possible

D4.2: Minimum of 6 Products to be taken into further investigation

WP5 Evaluation and testing tapes (Vito, WKI, PI SAS, Month 9-33)

In the very beginning, a tacky surface is a good indication that a product is useful as a PSA-raw material. But when starting with the balancing of the mechanical properties, more objectively comparable experiments are needed.

Such experiments are done at Vito by conducting peel, shear and tack-tests, and additional experiments can be carried out at the institutes by rheological characterization.

Deliverables:

Cooperation Agreement regarding the »BioTape« Joint Project

D5.1 - A minimum of 3 products to be sampled to customers

WP6 Project coordination and management (WKI, Vito, PI SAS, Month 1-36)

The Fraunhofer WKI will be responsible for the coordination and project management for all subprojects of the joint project. It will secure the proper documentation of the project and guarantee information flow between the partners by means of regular project meetings. The WKI will mediate in case of conflicts arising, follow up on the quality management and guarantee the compliance of good scientific practice.

Deliverables:

D6.1. Signed consortium agreement (M3)

D6.2. Documentation and communication of project results (M1-36)

D6.3. Planning and preparation of virtual and in person meetings (M1-36)

Cooperation Agreement regarding the »BioTape« Joint Project

Gantt-Chart

WP	Work packages	PM Partner	Year 1				Year 2				Year 3			
1	Definition and properties and specifications	1 PM Vito 0.2 PM PI SAS 0.2 WKI												
2	Synthesis and characterization of solvent-based PSA	23 PM PI SAS												
3	Synthesis and characterization of UV-curable PSA	6 PM WKI												
4	Formulation and application of PSA on tapes	11 PM Vito 7 PM PI SAS 0.6 PM WKI												
5	Evaluation and testing tapes	11 PM Vito PI SAS 0.8 WKI												
6	Project coordination and management	1.5 PM WKI 1 PM Vito 3 PM PI SAS												

IV. Exploitation plan

IV.1 Economical success chances

The main barriers for an economical success can be seen in the availability of the raw-materials at a competitive cost. When this issue is solved, the applications for commonly used tapes are so wide, from removable to permanent types, from low to high-temperature applications, that mechanical properties play only a minor role. It is a common misunderstanding in our days, that a better product will replace a lower performing product. The key driver of nearly every development is the pricing. Our product will be the first available bio-based tape adhesive in Europe, giving the opportunity to supply this market with products made from renewable resources. In addition, the UV-curing PSAs rely on a completely different chemistry, resulting in a product with unprecedented properties. While usually monomeric acrylates are being polymerized by UV-light, in our case linear oligomeric prepolymers are being used, which allow for a more crosslinked network and in turn different properties. Therefore, the product developed in our case will be different from the state-of-the-art materials in two respects: First, it will be bio-based, which results in a better CO₂-balance and in

Cooperation Agreement regarding the »BioTape« Joint Project

turn a more renewable product. And second, novel properties of the tapes can be achieved, making the product even more competitive with existing materials.

IV.2 Scientific and technical success chances

Scientifically, the success chances to synthesize polymers that can be used in both bio-based UV-curing and solvent-based PSA are quite high, as both scientific partners have worked with similar building blocks in the past for other applications, such as 3D-printing. However, the main technical challenge will be to obtain polymers derived from renewable resources that will show sufficient adhesion properties needed for commercial PSAs. Once the renewable pressure sensitive adhesives (PSA) based on poly(amido amine)s from itaconic acid will be established, there are high technical success chances, since the production and application of PSA on tapes is a well managed process in VITO.

IV.3 Economical and scientific exploitation potential

Scientific:

The targeted UV polymerization achieves a reduction of both volatile organic compounds (VOCs) and the emission of greenhouse gasses. This is beneficial from an environmental, as well as work safety standpoint. The use of renewable raw materials as building blocks for high-quality adhesive tapes has several advantages. First, instead of using fossil-based building blocks, the use of bio-based monomers reduces the greenhouse gas emission into the atmosphere, adhesive tapes based on renewable raw materials store CO₂ and even actively contribute to a CO₂ reduction in the atmosphere. Secondly, the use of regional building blocks, such as vegetable oils, also reduces the dependency on the import of fossil resources. Finally, from a socio-economic point of view, jobs will be created in sustainable production that are not dependent on fossil raw materials, which will contribute to securing these jobs in the long term. Therefore, the product described herein has the potential to be a truly sustainable material by being environmentally, socially and economically sustainable.

For the Fraunhofer WKI, the scientific exploitation potential is very high, as a successful course of the project described herein will allow to transfer the UV-curing polymer resins to new fields of applications. They have before been used for coatings and additive manufacturing materials. Their utilization in adhesive applications is new and will allow for the use of these bio-based UV-curing polymer resins in further adhesive applications. Given a positive outcome of the project further follow-up projects in the field of electronics or automotive could be initiated. For this, adhesive formulators, like Henkel or Panacol will be contacted after the end of the project and new projects could be initiated one to two years after the end of Bio-Tape.

For VITO, the new materials provided by Fraunhofer and PI SAS will allow for new properties that could be complementary to existing materials. This in turn could lead to new fields of applications.

Economical:

Product cycles in the construction sector are often in the range of 2-5 years. Conversions take about 1 year for internal and external testing at the customer and participating testing institutes. Individual customers in the "Vitolen" product range often achieve a turnover of around 50,000 €/a. If, after the first year after development, a customer succeeds in switching to a sustainably produced adhesive, this would be associated with a turnover of 50,000 €/a. For some customers, their cradle to cradle (CRC) level gold or platinum certification already requires sustainability, which makes them switch quite easily. In the following 5 years, a similar increase also seems feasible, which would increase sales in this category to about 250,000 €/a. At the same time, of course, other market segments would be provided with the experience, so that for the 4 areas mentioned above, a total turnover of about 1 million €/a after about 10 years seems achievable.

Within the project, personnel costs of about 150,000 € have to be raised by VITO. With a return on sales of about 10%, this corresponds to a turnover of 1.5 M€, which can be achieved approximately in year 5 after the end of the project, as the following table shows.

It is assumed that, starting from the construction sector, further markets will be opened up with newly developed products, resulting in the following turnover for VITO in the next five years.

Cooperation Agreement regarding the »BioTape« Joint Project

Year after Project-Ending	Construction [k€]	Mounting [k€]	Transportation [k€]	Medical [k€]	Total turnover [k€]
0	0	0	0	0	0
1	50	0	0	0	50
2	100	50	0	0	200
3	150	100	50	0	500
4	200	150	100	0	950
5	250	200	150	50	1600

It is envisaged to protect the project results by submitting a joint patent application in the field of pressure sensitive adhesives. Depending on the properties of the PSA several applications could be addressed ranging from "simple" tapes, like single-sided insulation tapes to double sided tapes for mechanical fixture (requiring high mechanical stability) or medical tapes with bio-compatibility. This could result in more than one patent application.

For the final application of the PSA formulation for adhesive tapes, Vito will be able to exploit the new technology by selling tapes with a higher bio-based content. As to date almost no bio-based products are commercially available, the tapes provided by VITO will have a unique selling point and considerable market potential. In addition, VITO can use the PSA to develop several tapes for different applications, as described above.

For WKI, the project results will be economically exploited in two ways: First, the results could be used for patent applications in the field of UV-curing resins for adhesive applications, which would allow on the mid- to long-term (2-5 years after the end of the project) for revenues from licensing fees from industrial companies interested to produce this kind of material. Second, the results will allow for direct bilateral research projects with other industrial companies that are interested in UV-curing adhesives for other applications, such as construction, electronic and automotive (1-2 years after the end of the project).

Furthermore, in all these areas, follow-up projects with Slovakian and German industrial partners are possible. However, for this project only one product class was chosen to have a clear focus within the project duration. The investigation of further applications would have been extensive for this EUREKA project. With the results obtained, further research and development activities will be initiated at the end of the project duration by further intensifying the collaboration between the partners. For this further prospective project partners along the value chain, such as polymer resin manufacturers and adhesive formulators will be identified.

V. Division of labor / collaboration with 3rd parties

Why and how will this project benefit each partner through the collaboration? Is this the first cooperation between members of this consortium?

Both academic partners are part of running COST project focused on valorization of the renewable monomers based on furan derivatives. Participation in the COST project enabled the first contact between the WKI and PI SAS and agreement to submit the joint EUREKA project.

The created transnational project consortium allows connection of top experience covering the entire chain from basic research in the field of synthesis of polymers from renewable sources, development of both pressure sensitive and UV curable adhesives based on these polymers, application of adhesives to various types of tapes to the production and sale of these tapes.

For Academic partners the creation of international collaboration is one of their main goals; not only to attract students and staff from all over the world. This internationalization is important to stay relevant in all key areas of research and development as well as in education and training. The proposed project will allow the researchers from both institutes to expand their knowledge in synthesis and applicability of the polymers from renewable resources in adhesives applications. By participating in this transnational cooperation the results obtained in this project have a higher chance of being transferred to the industrial environment since industrial partners are already involved. Collaboration with the industrial partner will allow a change in the thinking and planning of the research experiments and the evaluation of results in terms of industrial use and social impact.

What is the added value of the international cooperation?

The project described in this proposal is the first collaboration of the partners involved. However, the expertise of the three partners is very complementary. Dr. Marcus Weber from Vito Immen has

Cooperation Agreement regarding the »BioTape« Joint Project

extensive experience in formulation, application and properties of PSA for the described products. The academic partners from Slovakia and Germany have both a lot of experience in the field of (bio-based) polymers, also for coatings and adhesive applications. However, while the research focus of Prof. Jaroslav Mosnacek is placed amongst others on bio-based poly(amido amines) for adhesive applications, Dr. Tobias Robert worked in the past intensively on bio-based acrylic acid-free polymer resins for UV-curing applications, such as printing inks and materials for additive manufacturing. Therefore, the academic partners can synthesize the materials for both solvent-based, as well as UV-curing PSA, while Vito Imren can test these materials and give feedback on the performance. This will allow for a development cycle that will finally result in bio-based products with the chance to compete with or even outperform state-of-the-art materials. A result that none of the partners could achieve on its own. In addition, within the duration of the collaboration, exchanges of students and young scientists will be carried out to benefit from the partners expertise and enlarge their experience to other fields. The partners are convinced that this project will lay the foundations for further fruitful collaborations in the field of bio-based adhesive materials.

Furthermore, it is noteworthy to say that the group of Prof. Mosnacek at the PI SAS has a strong expertise in the synthesis and investigation of bio-based polymeric resins, which can be used as solvent-based adhesives for tapes. Without the participation of the Slovakian partner, the project would lack a core competence and the development of one of the two envisaged product classes would not be possible. Furthermore, all partners will benefit from each others expertise. Both VITO, as well as the Fraunhofer WKI can benefit from the research activities of the PI SAS and can transfer these to their own research and development activities. Vice versa, the PI SAS can benefit from the German partners and advance research on bio-based materials in Slovakia. This will create an advantage for Slovakian research institutes and in the mid-term also for local Slovakian industry in this field.

In addition, the absence of a Slovakian industrial partner does not have a drawback on the economic exploitation possibilities of VITO. Given a positive outcome of the project, the collaboration of VITO with PI SAS will allow for the development and on the mid-term commercialization of bio-based adhesive tapes derived from solvent-based adhesives. This would not be possible without the participation of PI SAS, as the Fraunhofer WKI does not have this expertise. Therefore, VITO has a strong economic advantage due to the collaboration with the Slovakian partner even without the participation of an additional industrial partner from Slovakia.

VI. Necessity of the funding

Even though the basic chemistry of both types of polymeric materials has been used in other applications, such printing inks and coatings, the requirements for PSA are quite different as here tacky surfaces if the final products are needed, which is not desired for inks or coatings. Therefore, the polymer chemistry has to be adapted without having a detrimental effect on the polymerization chemistry. Furthermore, at the current point in time, it is difficult to foresee the costs of the final products, despite that fact that we start from more established and commercially competitive bio-based building blocks.

The funding is necessary, so the academic partners can support VITO with their research expertise. VITO would neither be able to conduct this kind of research and development themselves, nor financially support the institutes for their research work. Furthermore, due to the unforeseeable technical and economical risks, funding is necessary, as this risk could not be borne by the participating partners.

The funding will also be used for project meetings both in Slovakia, as well as Germany to ensure a good flow of information between the partners, as specified in WP6. In case of any unforeseeable restriction through the covid pandemic, it is planned to carry out all meeting as virtual meetings. However, if no restrictions apply, one or two in-person meetings are preferred in addition to short virtual meetings, as in-person meetings still allow for a better exchange, as well as the possibilities to visit each other's facilities.

None of the German partners have applied for additional external funding for this project. Furthermore, there is no base funding or own funding available for the Fraunhofer WKI to realize the project proposed herein (Es stehen keine Eigenmittel zur Umsetzung des Vorhabens zur Verfügung).

For VITO Imren GmbH there is no further own contribution available for the realization of this project proposed herein.

VII. References

- (1) Fourcade, D.; Ritter, B. S.; Walter, P.; Schönfeld, R.; Mülhaupt, R. Renewable resource-based epoxy resins derived from multifunctional poly(4-hydroxybenzoates). *Green Chem.* **2013**, *15* (4), 910. DOI: 10.1039/c3gc37088g.
- (2) Baroncini, E. A.; Kumar Yadav, S.; Palmese, G. R.; Stanzione, J. F. Recent advances in bio-based epoxy resins and bio-based epoxy curing agents. *J Appl Polym Sci* **2016**, *133* (45). DOI: 10.1002/app.44103.
- (3) Dreesbeke, M. A.; Aksakal, R.; Simula, A.; Asua, J. M.; Du Prez, F. E. Biobased acrylic pressure-sensitive adhesives. *Progress in Polymer Science* **2021**, *117*, 101396. DOI: 10.1016/j.progpolymsci.2021.101396.
- (4) Gui, C.; Wang, G.; Di Wu; Zhu, J.; Liu, X. Synthesis of a bio-based polyamidoamine-epichlorohydrin resin and its application for soy-based adhesives. *International Journal of Adhesion and Adhesives* **2013**, *44*, 237–242. DOI: 10.1016/j.ijadhadh.2013.03.011.
- (5) Tobias Robert. *IA-UV-3D Novel materials for UV-curing processes in additive manufacturing: funded by the German Ministry of Education and Research*. FKZ: 03XP0095E, Final report.
- (6) Tobias Robert. *NAWARO-UV-INK UV-curing printing inks derived from renewable resources: funded by the German Ministry of Agriculture*. FKZ: 22015614, Final report.
- (7) Robert, T.; Friebe, S. Itaconic acid – a versatile building block for renewable polyesters with enhanced functionality. *Green Chem.* **2016**, *18* (10), 2922–2934. DOI: 10.1039/C6GC00605A.
- (8) Pérocheau Arnaud, S.; Malitowski, N. M.; Meza Casamayor, K.; Robert, T. Itaconic Acid-Based Reactive Diluents for Renewable and Acrylate-Free UV-Curing Additive Manufacturing Materials. *ACS Sustainable Chem. Eng.* **2021**, *9* (50), 17142–17151. DOI: 10.1021/acssuschemeng.1c06713.
- (9) Robert, T.; Eschig, S.; Biemans, T.; Scheffler, F. Bio-based polyester itaconates as binder resins for UV-curing offset printing inks. *J Coat Technol Res* **2019**, *16* (3), 689–697. DOI: 10.1007/s11998-018-0146-4.

Cooperation Agreement regarding the »BioTape« Joint Project

Annex B

Declaration

Waiver of the freedom of publication pursuant to § 42 Nr. 1, Nr. 2 ArbNErfG

of

[insert] (name of staff member)

[insert] (full private address)

with regard to the joint research project "[insert] (name of project)" undertaken by the

Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.,
Hansastraße 27c, 80686 Munich, Germany

and

[insert] (name of university)

— and the further project partners

[insert] (name of partner)

[insert] (name of partner)

[insert] (name of partner)

on the basis of the cooperation agreement of [insert] (date) (hereafter: "Cooperation Agreement").

(1)

As a staff member in the abovementioned joint research project, I confirm that I have been informed by [insert] (Name of university) of the obligations which it has entered into towards the other partners in said joint project under the Cooperation Agreement, particularly with regard to the communication and transfer of work results and the proprietary and usage rights attached to them (Clause 4), and with regard to the non-disclosure and publication of work results and confidential information (Clauses 5 and 6). I also confirm that I have taken note of the Cooperation Agreement.

(2)

I hereby waive my rights, to the extent applicable and as far as I am personally concerned, in favour of the Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. and the abovementioned further project partners (except for the [insert] (Name of university)),

(i) to disclose (pursuant to § 42 Nr. 1 ArbNErfG) work-related inventions in the course of my teaching and research activities (positive right of publication) insofar as such disclosure may conflict with the abovementioned Cooperation Agreement,

and

(ii) to refuse disclosure (pursuant to § 42 Nr. 2 ArbNErfG) of such inventions (negative right of publication).

I may only exercise my usage rights pursuant to § 42 Nr. 3 ArbNErfG to the extent permitted by the Cooperation Agreement.

I hereby recognize as binding, with regard to § 42 Nr. 1-3 ArbNErfG, the contractual regulations of the abovementioned Cooperation Agreement and agree to fully support the partners in this joint

Cooperation Agreement regarding the »BioTape« Joint Project

VII. References

(1) Fourcade, D.; Ritter, B. S.; Walter, P.; Schönfeld, R.; Mülhaupt, R. Renewable resource-based

Cooperation Agreement regarding the »BioTape« Joint Project

research project in acquiring all intellectual property rights in this context through my punctual delivery of requisite statements.

(Date/signature of staff member)