BornAgain - Envelope task #1438

=== Physics ===

30 May 2016 16:08 - wuttke

Status:	In Progress	**Start date:**	23 May 2012
Priority:	Urgent	**Due date:**	
Assignee:		**% Done:**	80%
Category:		**Estimated time:**	0.00 hour
Target version:			

Description

Physical modelling tasks, unless covered by more specific top-level enevelop tasks

Subtasks:

Feature # 12: Calculation of refractive index for x-rays and neutrons from database	**Long Term Idea**
Envelope task # 428: == IsGISAXS coverage ==	**Archived**
Feature # 477: Implement/review Cone formfactor	**Archived**
Feature # 478: Implement/review Tethraedron formfactor	**Archived**
Feature # 479: Implement/review Prism6 formfactor	**Archived**
Feature # 480: Implement/review Cone6 formfactor	**Archived**
Feature # 481: Implement/review Cybooctaedron formfactor	**Archived**
Feature # 482: Implement/review Full spheroid formfactor	**Archived**
Feature # 483: Implement/review Anisotropic pyramid formfactor	**Archived**
Feature # 484: Implement/review Ellipsoid formfactor	**Archived**
Feature # 485: Implement/review Anisotropic hemi-spheroid formfactor	**Archived**
Feature # 486: Implement/review Spheroid formfactor	**Archived**
Documentation # 263: Review morphology file implementation in IsGISASXS and BornAgain	**Rejected**
Feature # 1030: SLD, specular and particle density	**Rejected**
Feature # 1044: Encode magnetization of materials instead of total magnetic induction	**Rejected**
Envelope task # 1119: == Reflectivity ==	**In Progress**
Feature # 31: Implement x-ray polarization factor	**Backlog**
Feature # 1005: Create off-specular simulation functional test	**Resolved**
Feature # 1103: extend simulation to transmission geometry (detector images with z<0)	**New**
Feature # 1120: Calculate the specular peak intensity: |R|^2 at the specular pixel	**Archived**
Feature # 1187: Implement 1D fitting in SpecularSimulation	**Rejected**
Feature # 1612: Specular peak: add forward scattering amplitudes to specular amplitude	**Backlog**
Feature # 1706: Profile simulation with multilayers containing large amount of layers	**Resolved**
Feature # 1722: self-absorption correction	**Long Term Idea**
Refactoring # 1732: Optimization in innermost loop in RT computation	**Rejected**
Refactoring # 1733: Avoid multiple calculations of same RT coefficients	**Resolved**
Bug # 1734: Investigate numerical stability of multilayer RT computation	**Resolved**
Feature # 1738: Rename files and classes in Multilayer to resolve ambiguity about "Matrix"	**Rejected**
Feature # 1287: == Particle form factors ==	**Rejected**
Refactoring # 1065: Revise particle form factors: change names, add few form factors, c...	**Backlog**
Feature # 1537: parametrize Gaussians and Lorentzians by mean and fwhm	**Rejected**
Feature # 1075: Cone6 form factor -> analytic	**Archived**
Documentation # 1262: Fix IsGISAXS references in form factor section	**Archived**
Documentation # 1279: Inkscape tasks	**Archived**
Documentation # 1280: draw tetrahedron as seen from -x	**Archived**
Feature # 1283: Provide functional test for all formfactors, when they are rotated and ...	**Archived**
Bug # 1294: provide substantial unit tests for factor computations	**Archived**
Refactoring # 1300: more stable computation of Prism6 formfactor	**Resolved**
Feature # 1399: Implement form factors for dodecahedron and icosahedron	**Resolved**

Documentation # 1400: blender: paint dodecahedron and icosahedron	**Archived**
Bug # 1401: correct inaccurate numerics near removable singularity in form factors Tetr...	**Archived**
Feature # 1409: accelerate Ripple1	**Archived**
Documentation # 1414: regenerate form factor images in manual	**Backlog**
Bug # 1416: form factors with numeric integration fail for small and for large q	**Waiting**
Bug # 1417: numeric inaccuracies in form factors	**Resolved**
Refactoring # 1418: provide cotangent, and replace division by tan(alpha) in pyramids	**Resolved**
Bug # 1420: Symmetry S2 not usable	**Resolved**
Bug # 1421: FullSphere F(q)=0 for small q	**Resolved**
Refactoring # 1432: final polish of polyhedral form factor	**Rejected**
Refactoring # 1546: disambiguate getRadius()	**Archived**
Bug # 1552: FormFactorTrivial should have RadialExtension = 0	**Resolved**
Refactoring # 1593: Remove soft particle constructors that have a volume argument inste...	**Archived**
Feature # 1289: == Instrument (beam, resolution, detector) ==	**Rejected**
Feature # 1029: ToF support in OffSpecSimulation	**Rejected**
Feature # 1184: Implement transformation to q-space for intensity image	**Archived**
Documentation # 1269: Update documentation for new phi angle definition	**Archived**
Feature # 1275: Provide rectangle detector examples and functional tests	**Archived**
Bug # 1449: Apply detector resolution function can give negative results	**Archived**
Feature # 1579: provide trapezoid resolution function to describe instruments with neut...	**Resolved**
Feature # 1599: provide another suite of functional tests: simulate on different grids,...	**Rejected**
Feature # 1721: Scattered intensity should depend on beam size and sample size	**Rejected**
Envelope task # 1406: == Particle correlations ==	**In Progress**
Feature # 319: Provide lamellar form factor for soft matter	**Long Term Idea**
Feature # 697: Use Monte Carlo integration over all incoherent parameters	**Backlog**
Feature # 907: Create MesoCrystal tutorial	**Backlog**
Documentation # 991: Revise and reintegrate chapter on particle distributions	**Archived**
Documentation # 157: full documentation of implemented theory for para- and mesocrystals	**Resolved**
Documentation # 988: Reformat landscape-oriented table	**Resolved**
Feature # 1032: Rotation of inter-particle structures	**Long Term Idea**
Refactoring # 1060: refactor SSCA according to manual	**New**
Support # 1199: Consider implementation of partial structure factor	**New**
Refactoring # 1407: rotate the sample, not Q	**Rejected**
Feature # 1540: Implement incoherent z-distribution of particles inside layer	**Long Term Idea**
Bug # 1580: ParticleComposition w/ distructive interference (selection rules not met)	**Resolved**
Bug # 1626: Specular calculation gives weird results below critical angle in presence o...	**Rejected**
Bug # 1629: GISASSimulatin setAnalyzerProperties total_transmission default parameter g...	**Rejected**
Feature # 1631: No impact of abundance optional argument in ParticleLayout addParticle ...	**Rejected**
Feature # 1645: == Graded layer and cross-layer particles ==	**Rejected**
Feature # 163: implement IsGISAXS Example 14 (graded layer)	**Resolved**
Refactoring # 1284: Move particle surface density to interference function instead of p...	**Rejected**
Feature # 1568: Implement TruncatedEllipsoid to replace HemiEllipsoid	**Backlog**
Refactoring # 1582: Correct model for dense particles on surface	**Resolved**
Feature # 1616: For correct computation of mean refractive index, no longer allow embed...	**Resolved**
Refactoring # 1649: Ensure consistent use of ambientMaterial	**Resolved**
Feature # 1669: Allow for multiple form factors (dwba or not) in FromFactorWrapper and ...	**Resolved**
Feature # 1670: Provide interface for adding particle shapes in different layers that a...	**Resolved**
Feature # 1671: Provide automatic splitting of particle shapes when they cross a layer ...	**Resolved**
Feature # 1672: Implement subdivision of a layer into multiple layers for graded interf...	**Resolved**
Refactoring # 1673: Design proposal for all subtasks under #1645	**Resolved**
Refactoring # 1784: Clean up code after implementation of graded layer approximation	**Resolved**
Feature # 1785: Add graded layer approximation to GUI	**Resolved**
Feature # 1688: == Roughness ==	**Rejected**

Feature # 1214: Provide LayerRoughness with a method representing roughness profile in ...	**New**
Bug # 1636: Unexpected wavelength depent intensity Roughness vs. ParticleLayout	**Rejected**
Feature # 1677: Independent roughness cross-correlation for disjoint sets of interfaces	**Backlog**