

Database References

Below we list the references to the articles that conform our database to apply SISSO. The Supplementary Information also contains an excel file that relates to this reference list, each entry is listed as: “last name of the first author”_“year of the publication”. For example, the data in [1] is addressed as “Ackland_1995”.

References

- [1] Ackland, G. J. and Wooding, S. J. and Bacon, D. J., “Defect, surface and displacement-threshold properties of α -zirconium simulated with a many-body potential,” *Philos. Mag. A*, vol. 71, no. 3, pp. 553–565, 1995.
- [2] Ackland, G. J. and Bacon, D. J. and Calder, A. F. and Harry, T., “Computer simulation of point defect properties in dilute Fe—Cu alloy using a many-body interatomic potential,” *Philos. Mag. A*, vol. 75, no. 3, pp. 713–732, 1997.
- [3] Alamo, A. and De Novion, C. H. and Lesueur, D. and Dirand, M., “Displacement threshold energy determination for Cu_3Au and CuAu ordered alloys,” *Radiat. Eff.*, vol. 70, no. 1-4, pp. 157–172, 1983.
- [4] Allison, C. Y. and Stoller, R. E. and Kenik, E. A., “Electron microscopy of electron damage in tantalum carbide,” *J. Appl. Phys.*, vol. 63, no. 5, pp. 1740–1743, 1988.
- [5] Anon., “Standard practice for neutron radiation damage simulation by charged-particle irradiation,” United States: ASTM, 1984.
- [6] Arnold, George W. and Compton, W. Dale, “Threshold Energy for Lattice Displacement in Al_2O_3 ,” *Phys. Rev. Lett.*, vol. 4, no. 2, pp. 66–68, 1960.
- [7] Arnold, George W., “Defect Structure of Crystalline Quartz. I. Radiation-Induced Optical Absorption,” *Phys. Rev.*, vol. 140, no. 1A, pp. A176–A178, 1965.
- [8] Audouard, A. and Balogh, J. and Dural, J. and Jousset, J. C., “Displacement threshold energy of iron atoms in amorphous and crystalline $\text{Fe}_{75}\text{B}_{25}$ alloys,” *Radiat. Eff.*, vol. 62, no. 3-4, pp. 161–165, 1982.

- [9] Bacon, DJ and Calder, AF and Harder, JM and Wooding, SJ, “Computer simulation of low-energy displacement events in pure bcc and hcp metals,” *J. Nucl. Mater.*, vol. 205, pp. 52–58, 1993.
- [10] Bacon, D.J. and Deng, H.F. and Gao, F., “Computer simulation of threshold displacement events in alloys,” *J. Nucl. Mater.*, vol. 205, pp. 84–91, 1993.
- [11] Banbury, P. C. and Haddad, I. N., “Energy dependence of anisotropy of defect production in electron irradiated diamond-type crystals: II. theoretical model,” *Philos. Mag.*, vol. 14, no. 130, pp. 841–846, 1966.
- [12] Banhart, F. and Li, J. X. and Krashenninnikov, A. V., “Carbon nanotubes under electron irradiation: Stability of the tubes and their action as pipes for atom transport,” *Phys. Rev. B*, vol. 71, no. 24, pp. 241408, 2005.
- [13] Banisalman, Mosab Jaser and Park, Sehyeok and Oda, Takuji, “Evaluation of the threshold displacement energy in tungsten by molecular dynamics calculations,” *J. Nucl. Mater.*, vol. 495, pp. 277–284, 2017.
- [14] Banisalman, Mosab Jaser and Oda, Takuji, “Atomistic simulation for strain effects on threshold displacement energies in refractory metals,” *Comput. Mater. Sci.*, vol. 158, pp. 346–352, 2019.
- [15] Barry, A.L. and Lehmann, B. and Fritsch, D. and Braunig, D., “Energy dependence of electron damage and displacement threshold energy in 6H silicon carbide,” *IEEE Trans. Nucl. Sci.*, vol. 38, no. 6, pp. 1111–1115, 1991.
- [16] Toth, Robert S. and Sato, Hiroshi, “Antiphase Domains in Ordered Au_3Cu Alloys,” *J. Appl. Phys.*, vol. 35, no. 3, pp. 698–703, 1964.
- [17] Bauer, Walter and Sosin, A., “Evaluation and interpretation of threshold displacement energy measurements,” *J. Appl. Phys.*, vol. 37, no. 4, pp. 1780–1787, 1966.
- [18] Bauer, Walter and Goeppinger, W. F., “Point-defect studies in platinum by electron irradiation at low temperatures. I. defect production,” *Phys. Rev.*, vol. 154, no. 3, pp. 588–596, 1967.
- [19] Bauer, W. and Anderman, A. I. and Sosin, A., “Atomic displacement process in gold,” *Phys. Rev.*, vol. 185, no. 3, pp. 870–875, 1969.
- [20] Beeler, Benjamin and Asta, Mark and Hosemann, Peter and Grønbech-Jensen, Niels, “Effect of strain and temperature on the threshold displacement energy in body-centered cubic iron,” *J. Nucl. Mater.*, vol. 474, pp. 113–119, 2016.
- [21] Beeler, Benjamin and Zhang, Yongfeng and Okuniewski, Maria and Deo, Chaitanya, “Calculation of the displacement energy of α and γ uranium,” *J. Nucl. Mater.*, vol. 508, pp. 181–194, 2018.

- [22] Dacus, Benjamin and Beeler, Benjamin and Schwen, Daniel, “Calculation of threshold displacement energies in UO_2 ,” *J. Nucl. Mater.*, vol. 520, pp. 152–164, 2019.
- [23] Biget, M. and Maury, F. and Vajda, P. and Lucasson, A. and Lucasson, P., “Production and mutual annihilation of frenkel pairs in low temperature irradiated zirconium,” *Radiat. Eff.*, vol. 7, no. 3-4, pp. 223–229, 1971.
- [24] Biget, M. and Vajda, P. and Lucasson, A. and Lucasson, P., “A study of electron irradiation damage in single crystals of molybdenum,” *Radiat. Eff.*, vol. 21, no. 4, pp. 229–234, 1974.
- [25] Biget, M. and Maury, F. and Vajda, P. and Lucasson, A. and Lucasson, P., “Near-threshold displacements in tantalum single crystals,” *Phys. Rev. B*, vol. 19, no. 2, pp. 820–830, 1979.
- [26] Bishop, Clare L. and Murphy, Samuel T. and Rushton, Michael J.D. and Grimes, Robin W., “The influence of dipole polarisation on threshold displacement energies in UO_2 ,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 274, pp. 195–199, 2012.
- [27] Björkas, C. and Nordlund, K., “Comparative study of cascade damage in Fe,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 259, no. 2, pp. 853–860, 2007.
- [28] Bois, P and Beuneu, F, “Displacement threshold energy in pure Bi,” *J. Phys. F: Met. Phys.*, vol. 17, no. 12, pp. 2365–2372, 1987.
- [29] Bond, G. M. and Robertson, I. M. and Zeides, F. M. and Birnbaum, H. K., “Sub-threshold electron irradiation damage in hydrogen-charged aluminium,” *Philos. Mag. A*, vol. 55, no. 5, pp. 669–681, 1987.
- [30] Bourgoin, J. C. and Massarani, B., “Threshold energy for atomic displacement in diamond,” *Phys. Rev. B*, vol. 14, no. 8, pp. 3690–3694, 1976.
- [31] Bryant, FJ and Cox, AFJ, “The effect of radiation damage at room temperature on the thermoluminescence characteristic of single crystals of zinc sulphide,” *Phys. Lett.*, vol. 20, no. 2, pp. 108–109, 1966.
- [32] Bryant, F J and Cox, A F J and Webster, E, “Atomic displacements and the nature of band edge radiative emission in cadmium telluride,” *J. Phys. C: Solid State Phys.*, vol. 1, no. 6, pp. 1737–1745, 1968.
- [33] Bryant, F.J. and Baker, A.T.J., “Damage sensitive cathodoluminescence of zinc telluride,” *Phys. Lett. A*, vol. 35, no. 6, pp. 457–458, 1971.
- [34] Bryant, F J and Baker, A T J, “Threshold energy for tellurium displacement in zinc telluride,” *J. Phys. C: Solid State Phys.*, vol. 5, no. 16, pp. 2283–2288, 1972.

- [35] Bryant, F J and Cox, A F J, “Atomic displacement energies for binary semiconductors,” *J. Phys. C: Solid State Phys.*, vol. 1, no. 6, pp. 1734–1736, 1968.
- [36] Buck, E. C., “Effects of electron irradiation of rutile,” *Radiat. Eff. Defects Solids*, vol. 133, no. 2, pp. 141–152, 1995.
- [37] Caro, A. and Victoria, M. and Averback, R. S., “Threshold displacement and interstitial-atom formation energies in Ni₃Al,” *J. Mater. Res.*, vol. 5, no. 7, pp. 1409–1413, 1990.
- [38] Caulfield, Kevin J. and Cooper, Ronald and Boas, John E, “Point Defects in Electron-Irradiated Oxide Single Crystals,” *J. Am. Ceram. Soc.*, vol. 78, no. 4, pp. 1054–1060, 1995.
- [39] Chadderton, Lewis T. and Torrens, Ian Mcc, “Correlated Atomic Collisions in Irradiated Crystal Lattices,” *Nature*, vol. 208, no. 5013, pp. 880–882, 1965.
- [40] Chartier, Alain and Meis, Constantin and Crocombette, Jean-Paul and Corrales, L. René and Weber, William J., “Atomistic modeling of displacement cascades in La₂Zr₂O₇ pyrochlore,” *Phys. Rev. B*, vol. 67, no. 17, pp. 174102, 2003.
- [41] Chen, Y and Trueblood, D L and Schow, O E and Tohver, H T, “Colour centres in electron irradiated MgO,” *J. Phys. C: Solid State Phys.*, vol. 3, no. 12, pp. 2501–2508, 1970.
- [42] Chen, Nanjun and Gray, Sean and Hernandez-Rivera, Efrain and Huang, Danhong and LeVan, Paul D. and Gao, Fei, “Computational simulation of threshold displacement energies of GaAs,” *J. Mater. Res.*, vol. 32, no. 8, pp. 1555–1562, 2017.
- [43] Chen, Elton Y. and Deo, Chaitanya and Dingreville, Rémi, “Atomistic simulations of temperature and direction dependent threshold displacement energies in α - and γ -uranium,” *Comput. Mater. Sci.*, vol. 157, pp. 75–86, 2019.
- [44] Cheng, Gang and Wei, Nian and Wang, Lizong and Qi, Jianqi and Zeng, Qiang and Lu, Tiecheng and Wang, Zhiguo, “An ab initio molecular dynamics study on the threshold displacement energies in yttrium aluminum garnet,” *J. Appl. Phys.*, vol. 126, no. 5, pp. 055701, 2019.
- [45] Clinard Jr, Frank W. and Hobbs, Linn W., “Radiation effects in non-metals,” in *Modern Mod. Probl. Condens. Matter Sci.*, vol. 13, pp. 387–471, Elsevier, 1986.
- [46] Compton, W. Dale and Arnold, George W., “Radiation effects in fused silica and α -Al₂O₃,” *Discuss. Faraday Soc.*, vol. 31, pp. 130–139, 1961.

- [47] Cooper, R. and Smith, K.L. and Colella, M. and Vance, E.R. and Phillips, M., “Optical emission due to ionic displacements in alkaline earth titanates,” *J. Nucl. Mater.*, vol. 289, no. 1-2, pp. 199–203, 2001.
- [48] Corbett, J. W. and Denney, J. M. and Fiske, M. D. and Walker, R. M., “Electron irradiation of copper near 10 K,” *Phys. Rev.*, vol. 108, no. 4, pp. 954–964, 1957.
- [49] Corbett, J. W. and Walker, R. M., “Threshold Measurements and the Production of Radiation Damage in the Noble Metals,” *Phys. Rev.*, vol. 117, no. 4, pp. 970–971, 1960.
- [50] Costantini, Jean-Marc and Beuneu, François, “Threshold displacement energy in yttria-stabilized zirconia,” *Phys. Status Solidi (c)*, vol. 4, no. 3, pp. 1258–1263, 2007.
- [51] Costantini, Jean-Marc and Beuneu, François and Morrison-Smith, Sarah and Devanathan, Ram and Weber, William J., “Paramagnetic defects in electron-irradiated yttria-stabilized zirconia: Effect of yttria content,” *J. Appl. Phys.*, vol. 110, no. 12, pp. 123506, 2011.
- [52] Cowen, Benjamin J. and El-Genk, Mohamed S., “Probability-based threshold displacement energies for oxygen and silicon atoms in α -quartz silica,” *Comput. Mater. Sci.*, vol. 117, pp. 164–171, 2016.
- [53] Crespi, Vincent H. and Chopra, Nasreen G. and Cohen, Marvin L. and Zettl, A. and Louie, Steven G., “Anisotropic electron-beam damage and the collapse of carbon nanotubes,” *Phys. Rev. B*, vol. 54, no. 8, pp. 5927–5931, 1996.
- [54] Crocombette, Jean-Paul and Ghaleb, Dominique, “Molecular dynamics modeling of irradiation damage in pure and uranium-doped zircon,” *J. Nucl. Mater.*, vol. 295, no. 2-3, pp. 167–178, 2001.
- [55] Cui, F.Z. and Li, H.D. and Jin, L. and Li, Y.Y., “Simulations on radiation damage initiated by O (1) PKA in $\text{YBa}_2\text{Cu}_3\text{O}_7$,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 91, no. 1-4, pp. 374–377, 1994.
- [56] Dacus, Benjamin and Beeler, Benjamin and Schwen, Daniel, “Calculation of threshold displacement energies in UO_2 ,” *J. Nucl. Mater.*, vol. 520, pp. 152–164, 2019.
- [57] Daou, J. N. and Bonnet, J. E. and Vajda, P. and Biget, M. and Lucasson, A. and Lucasson, P., “The effect of low-temperature electron irradiation on lutetium and its hydrogen solid solutions,” *Phys. Stat. Sol. (a)*, vol. 40, no. 1, pp. 101–108, 1977.
- [58] Das, Gopal, “Determination of the threshold-displacement energy in α - Al_2O_3 by high-voltage electron microscopy,” *J. Mater. Sci. Lett.s*, vol. 2, no. 8, pp. 453–456, 1983.

- [59] Delgado, Diego and Vila, Rafael, “Statistical Molecular Dynamics study of displacement energies in diamond,” *J. Nucl. Mater.*, vol. 419, no. 1-3, pp. 32–38, 2011.
- [60] Detweiler, Robert M. and Kulp, B. A., “Annealing of radiation damage in ZnSe,” *Phys. Rev.*, vol. 146, no. 2, pp. 513–516, 1966.
- [61] Devanathan, Ramaswami and De La Rubia, T Diaz and Weber, William J., “Displacement threshold energies in β -SiC,” *J. Nucl. Mater.*, vol. 253, no. 1-3, pp. 47–52, 1998.
- [62] Devanathan, R and Weber, W.J., “Displacement energy surface in 3C and 6H SiC,” *J. Nucl. Mater.*, vol. 278, no. 2-3, pp. 258–265, 2000.
- [63] Devanathan, R. and Weber, W. J. and Gao, F., “Atomic scale simulation of defect production in irradiated 3C-SiC,” *J. Appl. Phys.*, vol. 90, no. 5, pp. 2303–2309, 2001.
- [64] Devanathan, R. and Weber, W. J., “Insights into the radiation response of pyrochlores from calculations of threshold displacement events,” *J. Appl. Phys.*, vol. 98, no. 8, pp. 086110, 2005.
- [65] Devanathan, Ram and Weber, William J., “Simulation of collision cascades and thermal spikes in ceramics,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 268, no. 19, pp. 2857–2862, 2010.
- [66] Dimitrov, C and Sitaud, B and Dimitrov, O, “Displacement threshold energies in Ni (Al) solid solutions and in Ni₃Al,” *J. Nucl. Mater.*, vol. 208, no. 1-2, pp. 53–60, 1994.
- [67] Egerton, R. F., “The threshold energy for electron irradiation damage in single-crystal graphite,” *Philos. Mag.*, vol. 35, no. 5, pp. 1425–1428, 1977.
- [68] El-Azab, A and Ghoniem, NM, “Molecular dynamics study of the displacement threshold surfaces and the stability of Frenkel pairs in β -SiC,” *J. Nucl. Mater.*, vol. 191, pp. 1110–1113, 1992.
- [69] Erginsoy, C. and Vineyard, G. H. and Englert, A., “Dynamics of Radiation Damage in a Body-Centered Cubic Lattice,” *Phys. Rev.*, vol. 133, no. 2A, pp. A595–A606, 1964.
- [70] Erginsoy, C. and Vineyard, G. H. and Shimizu, A., “Dynamics of Radiation Damage in a Body-Centered Cubic Lattice. II. Higher Energies,” *Phys. Rev.*, vol. 139, no. 1A, pp. A118–A125, 1965.
- [71] Faust, W. E. and O’Neal, T. N. and Chaplin, R. L., “Measurements of the electron-irradiation damage rates in magnesium,” *Phys. Rev.*, vol. 183, no. 3, pp. 609–610, 1969.
- [72] Fikar, J. and Schäublin, R., “Molecular dynamics simulation of radiation damage in bcc tungsten,” *J. Nucl. Mater.*, vol. 386-388, pp. 97–101, 2009.

- [73] Fu, Jiawei and Ding, Wenyi and Zheng, Mingjie and Mao, Xiaodong, “Molecular dynamics study on threshold displacement energies in Fe-Cr alloys,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 419, pp. 1–7, 2018.
- [74] Gao, F. and Bacon, D. J., “Point-defect and threshold displacement energies in Ni₃Al II. Events at the displacement threshold,” *Philos. Mag. A*, vol. 67, no. 2, pp. 289–306, 1993.
- [75] Gao, F. and Bacon, D. J. and Ackland, G. J., “Point-defect and threshold displacement energies in Ni₃Al I. Point-defect properties,” *Philos. Mag. A*, vol. 67, no. 2, pp. 275–288, 1993.
- [76] Gao, F. and Bacon, D. J., “Molecular dynamics study of displacement cascades in Ni₃Al I. General features and defect production efficiency,” *Philos. Mag. A*, vol. 71, no. 1, pp. 43–64, 1995.
- [77] Gao, F. and Bacon, D. J. and Newall, Bacon S., “Point-defect properties and threshold displacement energies in Cu₃Au,” *Philos. Mag. Lett.*, vol. 77, no. 5, pp. 229–239, 1998.
- [78] Gao, Fei and Xiao, Haiyan and Zu, Xiaotao and Posselt, Matthias and Weber, William J., “Defect-Enhanced Charge Transfer by Ion-Solid Interactions in SiC using Large-Scale *Ab Initio* Molecular Dynamics Simulations,” *Phys. Rev. Lett.*, vol. 103, no. 2, pp. 027405, 2009.
- [79] Gao, F. and Xiao, H.Y. and Weber, W.J., “Ab initio molecular dynamics simulations of low energy recoil events in ceramics,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 269, no. 14, pp. 1693–1697, 2011.
- [80] Gely, Marie-Hélène, “IRRADIATIONS A BASSE TEMPERATURE DE L’IRIDIUM ET DU COMPOSE NB:(3) GE,” Ph.D. thesis, 1982.
- [81] Gibson, J. B. and Goland, A. N. and Milgram, M. and Vineyard, G. H., “Dynamics of Radiation,” *Phys. Rev.*, vol. 120, no. 4, pp. 1229–1253, 1960.
- [82] Gonzalez, E. and Abreu, Y. and Cruz, C.M. and Piñera, I. and Leyva, A., “Molecular-dynamics simulation of threshold displacement energies in BaTiO₃,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 358, pp. 142–145, 2015.
- [83] Gosset, D. and Morillo, J. and Allison, C. and De Novion, C. H., “Electron irradiation damage in stoichiometric and substoichiometric tantalum carbides TaC_x part 1: Thershold displacement energies,” *Radiat. Eff. Defects Solids*, vol. 118, no. 3, pp. 207–224, 1991.
- [84] Gray, R L and Rushton, M J D and Murphy, S T, “Molecular dynamics simulations of radiation damage in YBa₂Cu₃O₇,” *Supercond. Sci. Technol.*, vol. 35, no. 3, pp. 035010, 2022.

- [85] Grimaldi, M. G. and Calcagno, L. and Musumeci, P. and Frangis, N. and Van Landuyt, J., “Amorphization and defect recombination in ion implanted silicon carbide,” *J. Appl. Phys.*, vol. 81, no. 11, pp. 7181–7185, 1997.
- [86] Grimshaw, J A and Banbury, P C, “The displacement energy in GaAs,” *Proc. Phys. Soc.*, vol. 84, no. 1, pp. 151–162, 1964.
- [87] Guglielmetti, Aurore and Chartier, Alain and Brutzel, Laurent Van and Crocombette, Jean-Paul and Yasuda, Kazuhiro and Meis, Constantin and Matsumura, Syo, “Atomistic simulation of point defects behavior in ceria,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 266, no. 24, pp. 5120–5125, 2008.
- [88] Guinan, Michael W. and Snead, C. Lewis and Goland, Allen N., “Defect production in thorium by low-temperature electron irradiation,” *Radiat. Eff.*, vol. 20, no. 1-2, pp. 33–36, 1973.
- [89] Hart, R. R. and Dunlap, H. L. and Marsh, O. J., “Disorder produced in SiC by ion bombardment,” *Radiat. Eff.*, vol. 9, no. 3-4, pp. 261–266, 1971.
- [90] Hemment, P. L. F. and Stevens, P. R. C., “Study of the Anisotropy of Radiation Damage Rates in n-Type Silicon,” *J. Appl. Phys.*, vol. 40, no. 12, pp. 4893–4901, 1969.
- [91] Hensel, Hartmut and Urbassek, Herbert M., “Preferential effects in low-energy Si bombardment of SiC,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 142, no. 3, pp. 287–294, 1998.
- [92] Herrmann, F and Pinard, P and Farge, Y, “About the displacement of the lithium ion in lithium fluoride by accelerated electrons,” *J. Phys. C: Solid State Phys.*, vol. 7, no. 11, pp. L199–L201, 1974.
- [93] Hodgson, ER and Agullo-Lopez, F, “Displacement damage in LiNbO₃,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 32, no. 1-4, pp. 42–44, 1988.
- [94] Holmström, E. and Kuronen, A. and Nordlund, K., “Threshold defect production in silicon determined by density functional theory molecular dynamics simulations,” *Phys. Rev. B*, vol. 78, no. 4, pp. 045202, 2008.
- [95] Holmström, Eero and Krashenninnikov, Arkady and Nordlund, Kai, “Quantum and Classical Molecular Dynamics Studies of the Threshold Displacement Energy in Si Bulk and Nanowires,” *MRS Online Proceedings Library (OPL)*, vol. 1181, pp. 1181–DD05, 2009.
- [96] Holmström, E and Nordlund, K and Kuronen, A, “Threshold defect production in germanium determined by density functional theory molecular dynamics simulations,” *Phys. Scr.*, vol. 81, no. 3, pp. 035601, 2010.

- [97] Hønstvet, I. A. and Smallman, R. E. and Marquis, P. M., “A determination of the atomic displacement energy in cubic silicon carbide,” *Philos. Mag. A*, vol. 41, no. 2, pp. 201–207, 1980.
- [98] Hossain, MK and Brown, LM, “Electron irradiation damage in magnesium,” *Acta Metall.*, vol. 25, no. 3, pp. 257–264, 1977.
- [99] Howe, L. M., “Electron displacement damage in cobalt in a high voltage electron microscope,” *Philos. Mag.*, vol. 22, no. 179, pp. 0965–0981, 1970.
- [100] Hudson, B. and Sheldon, B. E., “High voltage electron transmission microscopy of pyrolytic silicon carbide coatings from nuclear fuel particles,” *J. Microsc.*, vol. 97, no. 1-2, pp. 113–119, 1973.
- [101] Inui, H. and Mori, H. and Fujita, H., “Electron-irradiation-induced crystalline to amorphous transition in α -SiC single crystals,” *Philos. Mag. B*, vol. 61, no. 1, pp. 107–124, 1990.
- [102] Ionascut-Nedelcescu, A. and Carlone, C. and Houdayer, A. and Von Bardeleben, H.J. and Cantin, J.-L. and Raymond, S., “Radiation hardness of gallium nitride,” *IEEE Trans. Nucl. Sci.*, vol. 49, no. 6, pp. 2733–2738, 2002.
- [103] Iseler, G. W. and Dawson, H. I. and Mehner, A. S. and Kauffman, J. W., “Production rates of electrical resistivity in copper and aluminum induced by electron irradiation,” *Phys. Rev.*, vol. 146, no. 2, pp. 468–471, 1966.
- [104] Itoh, Noriaki and Tanimura, Katsumi, “Radiation effects in ionic solids,” *Radiat. Eff.*, vol. 98, no. 1-4, pp. 269–287, 1986.
- [105] Iwata, Tadao and Nihira, Takeshi, “Atomic displacements by electron irradiation in pyrolytic graphite,” *J. J. Phys. Soc. Jpn.*, vol. 31, no. 6, pp. 1761–1783, 1971.
- [106] Jackson, Matthew L. and Fossati, Paul C. M. and Grimes, Robin W., “Simulations of threshold displacement in beryllium,” *J. Appl. Phys.*, vol. 120, no. 4, pp. 045903, 2016.
- [107] Ji, Yaqi and Kowalski, Piotr M. and Neumeier, Stefan and Deissmann, Guido and Kulriya, Pawan K. and Gale, Julian D., “Atomistic modeling and experimental studies of radiation damage in monazite-type LaPO₄ ceramics,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 393, pp. 54–58, 2017.
- [108] Jiang, W and Weber, W.J and Thevuthasan, S and McCready, D.E, “Displacement energy measurements for ion-irradiated 6H-SiC,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 148, no. 1-4, pp. 557–561, 1999.

- [109] Jiang, M. and Xiao, H. Y. and Peng, S. M. and Yang, G. X. and Liu, Z. J. and Zu, X. T., “A comparative study of low energy radiation response of AlAs, GaAs and GaAs/AlAs superlattice and the damage effects on their electronic structures,” *Sci Rep*, vol. 8, no. 1, pp. 2012, 2018.
- [110] Jimenez, C. M. and Lowe, L. F. and Burke, E. A. and Sherman, C. H., “Radiation damage in Pd produced by 1-3-MeV electrons,” *Phys. Rev.*, vol. 153, no. 3, pp. 735–740, 1967.
- [111] Jung, Peter and Schilling, Werner, “Anisotropy of the threshold energy for the production of Frenkel pairs in tantalum,” *Phys. Rev. B*, vol. 5, no. 6, pp. 2046–2056, 1972.
- [112] Jung, P. and Chaplin, R. L. and Fenzl, H. J. and Reichelt, K. and Wombacher, P., “Anisotropy of the threshold energy for production of frenkel pairs in copper and platinum,” *Phys. Rev. B*, vol. 8, no. 2, pp. 553–561, 1973.
- [113] Jung, P. and Lucki, G., “Damage production by fast electrons in dilute alloys of vanadium, niobium and molybdenum,” *Radiat. Eff.*, vol. 26, no. 1-2, pp. 99–103, 1975.
- [114] Jung, Peter, “On a relation between threshold energy for atomic displacement in metals, bulk modulus, and interatomic potential,” *Radiat. Eff.*, vol. 35, no. 3, pp. 155–160, 1978.
- [115] Juslin, N. and Nordlund, K. and Wallenius, J. and Malerba, L., “Simulation of threshold displacement energies in FeCr,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 255, no. 1, pp. 75–77, 2007.
- [116] Kamada, K. and Kazumata, Y. and Suda, S., “Displacement Threshold Energy and Focuson-Impurity Interaction in Copper near 10° K,” *Phys. Status Solidi (b)*, vol. 7, no. 1, pp. 231–239, 1964.
- [117] Karim, A.S.A and Whitehead, M.E and Loretto, M.H and Smallman, R.E, “Electron radiation damage in HCP metals—I. The determination of the threshold displacement energy in Zn, Cd, Mg and Ti,” *Acta Metall.*, vol. 26, no. 6, pp. 975–981, 1978.
- [118] Kenik, E. A. and Mitchell, T. E., “Orientation dependence of the threshold displacement energy in copper and vanadium,” *Philos. Mag.*, vol. 32, no. 4, pp. 815–831, 1975.
- [119] Kerbiriou, X. and Barthe, M.-F. and Esnouf, S. and Desgardin, P. and Blondiaux, G. and Petite, G., “Silicon displacement threshold energy determined by electron paramagnetic resonance and positron annihilation spectroscopy in cubic and hexagonal polytypes of silicon carbide,” *J. Nucl. Mater.*, vol. 362, no. 2-3, pp. 202–207, 2007.

- [120] Kirsanov, V. V., Musin, N. N., and Shamarina, H. J., “Displacement threshold energy in high-temperature superconductors. II. Thresholds for O, Ba and Y in YBa₂Cu₃O₇,” *Phys. Lett. A*, 171(3-4):223–233, 1992, Elsevier.
- [121] Kittiratanawasin, L. and Smith, Roger and Uberuaga, B.P. and Sickafus, K.E. and Cleave, A.R. and Grimes, R.W., “Atomistic simulations of radiation induced defect formation in the Er₂O₃ sesquioxide,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 266, no. 12-13, pp. 2691–2697, 2008.
- [122] Kittiratanawasin, L. and Smith, Roger and Uberuaga, B.P. and Sickafus, Kurt, “Displacement threshold and Frenkel pair formation energy in ionic systems,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 268, no. 19, pp. 2901–2906, 2010.
- [123] Koike, J. and Parkin, D. M. and Mitchell, T. E., “Displacement threshold energy for type IIa diamond,” *Appl. Phys. Lett.*, vol. 60, no. 12, pp. 1450–1452, 1992.
- [124] Kotakoski, J. and Jin, C. H. and Lehtinen, O. and Suenaga, K. and Krasheninnikov, A. V., “Electron knock-on damage in hexagonal boron nitride monolayers,” *Phys. Rev. B*, vol. 82, no. 11, pp. 113404, 2010.
- [125] Krasheninnikov, A. V. and Banhart, F. and Li, J. X. and Foster, A. S. and Nieminen, R. M., “Stability of carbon nanotubes under electron irradiation: Role of tube diameter and chirality,” *Phys. Rev. B*, vol. 72, no. 12, pp. 125428, 2005.
- [126] Kulp, B. A. and Kelley, R. H., “Displacement of the sulfur atom in CdS by electron bombardment,” *J. Appl. Phys.*, vol. 31, no. 6, pp. 1057–1061, 1960.
- [127] Kulp, B. A. and Detweiler, R. M., “Threshold for electron radiation damage in ZnSe,” *Phys. Rev.*, vol. 129, no. 6, pp. 2422–2424, 1963.
- [128] Kulp, B. A., “Effects of Electron Bombardment on Single-Crystal CdSe at 77° K,” *J. Appl. Phys.*, vol. 37, no. 13, pp. 4936–4938, 1966.
- [129] Lee, Hak-Jun and Ryu, Ho-Jin, “Calculation of Threshold Displacement Energy of Xe-inserted UO₂ Using Atomistic Simulation,” *Korean Atomic Energy Society 2019 Fall Meeting*, 2019, Korean Atomic Energy Society.
- [130] Lefèvre, Jérémie and Costantini, Jean-Marc and Esnouf, Stéphane and Petite, Guillaume, “Silicon threshold displacement energy determined by photoluminescence in electron-irradiated cubic silicon carbide,” *J. Appl. Phys.*, vol. 105, no. 2, pp. 023520, 2009.
- [131] Lesueur, D. and Morillo, J. and Mutkaj, H. and Audouard, A. and Jousset, J. C., “Displacement threshold energies in binary compounds: Amorphous

- metallic alloy $\text{Fe}_{75}\text{B}_{25}$, low dimensional conductors TaS_2 and TaS_3 , homogeneous intermediate valence compound SmS ,” *Radiat. Eff.*, vol. 77, no. 1-2, pp. 125–144, 1983.
- [132] Lin, De-Ye and Song, Haifeng and Hui, Xi Dong, “Molecular dynamics simulation of threshold displacement energy and primary damage state in Niobium,” *arXiv preprint arXiv:1702.03598*, 2017.
 - [133] Liu, B and Xiao, H Y and Zhang, Y and Aidhy, D S and Weber, W J, “Ab initio molecular dynamics simulations of threshold displacement energies in SrTiO_3 ,” *J. Phys.: Condens. Matter*, vol. 25, no. 48, pp. 485003, 2013.
 - [134] Liu, Bin and Yuan, Fenglin and Jin, Ke and Zhang, Yanwen and Weber, William J, “Ab initio molecular dynamics investigations of low-energy recoil events in Ni and NiCo,” *J. Phys.: Condens. Matter*, vol. 27, no. 43, pp. 435006, 2015.
 - [135] Liu, Bin and Petersen, Benjamin and Zhang, Yanwen and Wang, Jingyang and Weber, William J., “Layered Structure Induced Anisotropic Low-Energy Recoils in Ti_3SiC_2 ,” *J. Am. Ceram. Soc.*, vol. 99, no. 8, pp. 2693–2698, 2016.
 - [136] Liu, Yong and Wang, Hao and Guo, Linxin and Yan, Zhanfeng and Zheng, Jian and Zhou, Wei and Xue, Jianming, “Deep learning inter-atomic potential for irradiation damage in 3C-SiC,” *Comput. Mater. Sci.*, vol. 233, p. 112693, 2024.
 - [137] Locker, D. R. and Meese, J. M., “Displacement thresholds in ZnO ,” *IEEE Trans. Nucl. Sci.*, vol. 19, no. 6, pp. 237–242, 1972.
 - [138] Loferski, J. J. and Rappaport, P., “Radiation damage in Ge and Si detected by carrier lifetime changes: damage thresholds,” *Phys. Rev.*, vol. 111, no. 2, pp. 432–439, 1958.
 - [139] Loferski, J. J. and Rappaport, P., “Displacement thresholds in semiconductors,” *J. Appl. Phys.*, vol. 30, no. 8, pp. 1296–1299, 1959.
 - [140] Lomer, Jenifer N. and Pepper, M., “Anisotropy of defect production in electron irradiated iron,” *Philos. Mag.*, vol. 16, no. 144, pp. 1119–1128, 1967.
 - [141] Sherman, Charles H. and Lowe, L. F. and Burke, E. A., “Probability of Atomic Displacement in Platinum,” *Phys. Rev.*, vol. 145, no. 2, pp. 568–575, 1966.
 - [142] Lucas, G. and Pizzagalli, L., “Ab initio molecular dynamics calculations of threshold displacement energies in silicon carbide,” *Phys. Rev. B*, vol. 72, no. 16, pp. 161202, 2005.

- [143] Lucasson, P. G. and Walker, R. M., "Production and recovery of electron-induced radiation damage in a number of metals," *Phys. Rev.*, vol. 127, no. 2, pp. 485–500, 1962.
- [144] Lucasson, P. G. and Walker, R. M., "Variation of Radiation Damage Parameters in Metals," *Phys. Rev.*, vol. 127, no. 4, pp. 1130–1136, 1962.
- [145] Makin, M. J., "Electron displacement damage in copper and aluminium in a high voltage electron microscope," *Philos. Mag.*, vol. 18, no. 153, pp. 637–653, 1968.
- [146] Makin, M. J., "A simple theory of loop formation and enhanced diffusion in crystals examined by high voltage electron microscopy," *Philos. Mag.*, vol. 20, no. 168, pp. 1133–1146, 1969.
- [147] Makin, MJ and Buckley, SN and Walters, GP, "The determination of the displacement energy in type 316 austenitic steel," *J. Nucl. Mater.*, vol. 68, no. 2, pp. 161–167, 1977.
- [148] Makletsov, A. A., Petrov, A. E., and Gann, V. V., "Evaluation of the displacement energy of Gd atoms in $\text{GdBa}_2\text{Cu}_3\text{O}_{7-\delta}$ from experimental data," *Nucl. Instrum. Methods Phys. Res., B.*, 94(3):203–206, 1994, Elsevier.
- [149] Malerba, L and Perlado, JM and Sanchez-Rubio, A and Pastor, I and Colombo, L and de la Rubia, T Diaz, "Molecular dynamics simulation of defect production in irradiated β -SiC," *J. Nucl. Mater.*, vol. 283, pp. 794–798, 2000.
- [150] Malerba, L. and Perlado, J. M., "Basic mechanisms of atomic displacement production in cubic silicon carbide: A molecular dynamics study," *Phys. Rev. B*, vol. 65, no. 4, pp. 045202, 2002.
- [151] Marton, D. and Boyd, K. J. and Lytle, T. and Rabalais, J. W., "Near-threshold ion-induced defect production in graphite," *Phys. Rev. B*, vol. 48, no. 10, pp. 6757–6766, 1993.
- [152] Maury, F. and Lucasson, A. and Lucasson, P., "On the Frenkel pair formation and mutual annihilation I in cobalt," *Phys. Lett. A*, vol. 29, no. 4, pp. 174–175, 1969.
- [153] Maury, F. and Vajda, P. and Lucasson, A. and Lucasson, P., "Subthreshold events and atomic displacements in electron-irradiated cadmium," *Radiat. Eff.*, vol. 10, no. 4, pp. 239–245, 1971.
- [154] Maury, F. and Vajda, P. and Lucasson, A. and Lucasson, P., "Anisotropy of Radiation Damage in Electron-Bombarded Hexagonal Metals. I. Damage Production and Recovery for Monocrystalline Cobalt, Zinc, and Cadmium," *Phys. Rev. B*, vol. 8, no. 12, pp. 5496–5505, 1973.

- [155] Maury, F. and Vajda, P. and Biget, M. and Lucasson, A. and Lucasson, P., “Anisotropy of the displacement energy in single crystals of molybdenum,” *Radiat. Eff.*, vol. 25, no. 3, pp. 175–185, 1975.
- [156] Maury, F. and Biget, M. and Vajda, P. and Lucasson, A. and Lucasson, P., “Anisotropy of defect creation in electron-irradiated iron crystals,” *Phys. Rev. B*, vol. 14, no. 12, pp. 5303–5313, 1976.
- [157] Maury, F. and Biget, M. and Vajda, P. and Lucasson, A. and Lucasson, P., “Frenkel pair creation and stage I recovery in W crystals irradiated near threshold,” *Radiat. Eff.*, vol. 38, no. 1-2, pp. 53–65, 1978.
- [158] Mazzarolo, Massimiliano and Colombo, Luciano and Lulli, Giorgio and Albertazzi, Eros, “Low-energy recoils in crystalline silicon: Quantum simulations,” *Phys. Rev. B*, vol. 63, no. 19, pp. 195207, 2001.
- [159] McIlwain, J. and Gardiner, R. and Sosin, A. and Myhra, S., “Low temperature electron-irradiation of β -tin,” *Radiat. Eff.*, vol. 24, no. 1, pp. 19–27, 1975.
- [160] Meese, J.M., “Zn Displacement,” *Appl. Phys. Lett.*, vol. 19, no. 4, pp. 86–87, 1971.
- [161] Meese, J.M and Locker, D.R., “Oxygen displacement energy in ZnO,” *Solid State Commun.*, vol. 11, no. 11, pp. 1547–1550, 1972.
- [162] Meis, C, “Computational study of plutonium–neodymium fluorobriotholite $\text{Ca}_9\text{Nd}_{0.5}\text{Pu}_{0.5}(\text{SiO}_4)(\text{PO}_4)_5\text{F}_2$ thermodynamic properties and threshold displacement energies,” *J. Nucl. Mater.*, vol. 289, no. 1-2, pp. 167–176, 2001.
- [163] Meis, C. and Chartier, A., “Calculation of the threshold displacement energies in UO_2 ,” *J. Nucl. Mater.*, vol. 341, no. 1, pp. 25–30, 2005.
- [164] Meissner, D. and Schilling, W., “Elektronenbestrahlungsexperimente an Tantal,” *Z. Naturforsch. A*, vol. 26, no. 3, pp. 502–511, 1971.
- [165] Merrill, Andrew and Cress, Cory D. and Rossi, Jamie E. and Cox, Nathanael D. and Landi, Brian J., “Threshold displacement energies in graphene and single-walled carbon nanotubes,” *Phys. Rev. B*, vol. 92, no. 7, pp. 075404, 2015.
- [166] Miller, M. G. and Chaplin, R. L., “Defect production in vanadium by low energy electron irradiations,” *Radiat. Eff.*, vol. 22, no. 2, pp. 107–108, 1974.
- [167] Miller, L. A. and Brice, D. K. and Prinja, A. K. and Picraux, S. T., “Displacement-threshold energies in Si calculated by molecular dynamics,” *Phys. Rev. B*, vol. 49, no. 24, pp. 16953–16964, 1994.

- [168] Mohan, Sruthi and Kaur, Gurpreet and David, C. and Panigrahi, B. K. and Amarendra, G., “*Ab initio* molecular dynamics simulation of threshold displacement energies and defect formation energies in $\text{Y}_4\text{Zr}_3\text{O}_{12}$,” *J. Appl. Phys.*, vol. 127, no. 23, pp. 235901, 2020.
- [169] Montet, G.L. and Myers, G.E., “Threshold energy for the displacement of surface atoms in graphite,” *Carbon*, vol. 9, no. 2, pp. 179–183, 1971.
- [170] Moreira, Pedro A.F.P. and Devanathan, Ram and Yu, Jianguo and Weber, William J., “Molecular-dynamics simulation of threshold displacement energies in zircon,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 267, no. 20, pp. 3431–3436, 2009.
- [171] Morris, J. and Cowen, B.J. and Teyseyre, S. and Hecht, A.A., “Molecular dynamics investigation of threshold displacement energies in CaF_2 ,” *Comput. Mater. Sci.*, vol. 172, pp. 109293, 2020.
- [172] Mota, F and Caturla, M.-J and Perlado, J.M and Dominguez, E and Kubota, A, “Atomistic simulations of threshold displacement energies in SiO_2 ,” *J. Nucl. Mater.*, vol. 329-333, pp. 1190–1193, 2004.
- [173] Myhra, S. and Gardiner, R. B., “Low-temperature electron-irradiation effects in Zn,” *Radiat. Eff.*, vol. 18, no. 1-2, pp. 39–45, 1973.
- [174] Neely, H. H. and Bauer, Walter, “Electron-irradiation damage-rate measurements in aluminum,” *Phys. Rev.*, vol. 149, no. 2, pp. 535–539, 1966.
- [175] Neely, H. H. and Keefer, D. W. and Sosin, A., “Electron irradiation and recovery of tungsten,” *Phys. Status Solidi (b)*, vol. 28, no. 2, pp. 675–682, 1968.
- [176] Neely, H. H., “Damage rate and recovery measurements on zirconium after electron irradiation at low temperatures,” *Radiat. Eff.*, vol. 3, no. 2, pp. 189–201, 1970.
- [177] Nord, J. and Nordlund, K. and Keinonen, J. and Albe, K., “Molecular dynamics study of defect formation in GaN cascades,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 202, pp. 93–99, 2003.
- [178] Nordlund, K. and Wallenius, J. and Malerba, L., “Molecular dynamics simulations of threshold displacement energies in Fe,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 246, no. 2, pp. 322–332, 2006.
- [179] Ogilvie, G. J., “Threshold of damage by xenon ions in gold and silver,” *Aust. J. Phys.*, vol. 22, no. 2, pp. 169–176, 1969, CSIRO Publishing.
- [180] O’Neal, T. N. and Chaplin, R. L., “Electron-irradiation effects in magnesium,” *Phys. Rev. B*, vol. 5, no. 10, pp. 3810–3816, 1972.

- [181] Olsson, P. and Becquart, C. S. and Domain, C., “*Ab initio* threshold displacement energies in iron,” *Mater. Res. Lett.*, vol. 4, no. 4, pp. 219–225, 2016.
- [182] Park, Byeongwon and Weber, William J and Corrales, L. René, “Molecular dynamics study of the threshold displacement energy in MgO,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 166-167, pp. 357–363, 2000.
- [183] Park, Byeongwon and Weber, William J. and Corrales, L. René, “Molecular-dynamics simulation study of threshold displacements and defect formation in zircon,” *Phys. Rev. B*, vol. 64, no. 17, pp. 174108, 2001.
- [184] Pasianot, R. and Alurralde, M. and Almazouzi, A. and Victoria, M., “Primary damage formation in molybdenum: a computer simulation study,” *Philos. Mag. A*, vol. 82, no. 9, pp. 1671–1689, 2002.
- [185] Pells, G. P., and Phillips, D. C., “Radiation damage of α -Al₂O₃ in the HVEM: I. Temperature dependence of the displacement threshold,” *J. Nucl. Mater.*, 80(2):207–214, 1979, Elsevier.
- [186] Pells, G. P., “The temperature dependence of the threshold displacement energy in MgO,” *Radiat. Eff.*, vol. 64, no. 1-4, pp. 71–75, 1982.
- [187] Pells, G. P. and Stathopoulos, A. Y., “Radiation damage in the cation sublattice of α -Al₂O₃,” *Radiat. Eff.*, vol. 74, no. 1-4, pp. 181–191, 1983.
- [188] Pells, G.P., “Radiation effects and damage mechanisms in ceramic insulators and window materials,” *J. Nucl. Mater.*, vol. 155-157, pp. 67–76, 1988.
- [189] Pells, George Philip, “Radiation damage effects in alumina,” *J. Am. Ceram. Soc.*, vol. 77, no. 2, pp. 368–377, 1994.
- [190] Perlado, J.M., “Behavior and computer simulation of SiC under irradiation with energetic particles,” *J. Nucl. Mater.*, vol. 251, pp. 98–106, 1997.
- [191] Perlado, J. M., Malerba, L., Sanchez-Rubio, A., and de la Rubia, T. D., “Analysis of displacement cascades and threshold displacement energies in β -SiC,” *J. Nucl. Mater.*, 276(1-3):235–242, 2000, Elsevier.
- [192] Petersen, B.A. and Liu, B. and Weber, W.J. and Zhang, Y., “Ab initio molecular dynamics simulations of low energy recoil events in MgO,” *J. Nucl. Mater.*, vol. 486, pp. 122–128, 2017.
- [193] Phillipp, F. and Saile, B. and Schmid, H. and Urban, K., “Energy and orientation dependence of atom displacement in BCC metals studied by high-voltage electron microscopy,” *Phys. Lett. A*, vol. 73, no. 2, pp. 123–126, 1979.

- [194] Phuong, H. S. M., Starostenkov, M. D., & Trung, N. T. H., “Threshold displacement energies in V-Cr-Ti ternary alloys,” *Vietnam Conference on Nuclear Science and Technology VINANST-14 Agenda and Abstracts*, p. 246, 2021, Viet Nam.
- [195] Pons, D. and Mooney, P. M. and Bourgoin, J. C., “Energy dependence of deep level introduction in electron irradiated GaAs,” *J. Appl. Phys.*, vol. 51, no. 4, pp. 2038–2042, 1980.
- [196] Pons, D. and Bourgoin, J., “Anisotropic-defect introduction in GaAs by electron irradiation,” *Phys. Rev. Lett.*, vol. 47, no. 18, pp. 1293–1296, 1981.
- [197] Poulin, F. and Bourgoin, J.C., “Threshold energy for atomic displacement in electron irradiated germanium,” *Rev. Phys. Appl. (Paris)*, vol. 15, no. 1, pp. 15–19, 1980.
- [198] Pruitt, A. B. and Chaplin, R. L., “Electron irradiation at 0.5 MeV for copper single crystals,” *Radiat. Eff.*, vol. 11, no. 2, pp. 119–121, 1971.
- [199] Rahman, M.M. and Yamamoto, T. and Matsumura, S. and Costantini, J.M. and Yasuda, K., “Ab Initio molecular dynamics study of threshold displacement energy in Zirconium Nitride,” *J. Nucl. Mater.*, vol. 554, pp. 153076, 2021.
- [200] Richardson, D. D., “Computer simulation of threshold radiation damage in rutile, TiO_2 ,” *Radiat. Eff.*, vol. 79, no. 1-4, pp. 75–85, 1983.
- [201] Rizk, R. and Vajda, P. and Lucasson, A. and Lucasson, P., “Displacement mechanisms in electron-irradiated molybdenum,” *Phys. Stat. Sol. (a)*, vol. 18, no. 1, pp. 241–246, 1973.
- [202] Roberts, C. Gordon and Rickey, W. P. and Shearin, Paul E., “Comparison of Electron-Radiation Damage Thresholds of Silver at Liquid-Helium and Liquid-Nitrogen Temperatures,” *J. Appl. Phys.*, vol. 37, no. 12, pp. 4517–4518, 1966.
- [203] Robinson, M. and Marks, N. A. and Whittle, K. R. and Lumpkin, G. R., “Systematic calculation of threshold displacement energies: Case study in rutile,” *Phys. Rev. B*, vol. 85, no. 10, pp. 104105, 2012.
- [204] Rullier-Albenque, Florence and Quere, Yves, “An experimental argument—in Nb_3Ge —for the Labbé-Barisic-Friedel theory of A-15 superconductors,” *Phys. Lett. A*, vol. 81, no. 4, 1981.
- [205] Saile, B., “The temperature dependence of the effective threshold energy for atom displacement in tantalum,” *phys. stat. sol. (a)*, vol. 89, no. 2, pp. K143–K145, 1985.

- [206] Sahoo, Deepak Ranjan and Chaudhuri, Paritosh and Swaminathan, Narasimhan, “A molecular dynamics study of displacement cascades and radiation induced amorphization in Li_2TiO_3 ,” *Comput. Mater. Sci.*, vol. 200, pp. 110783, 2021.
- [207] Bany Salman, Mohammad and Park, Minkyu and Banisalman, Mosab Jaser, “Atomistic Investigation of Interstitial Dislocation Loop Formation in Tantalum and Tantalum-Tungsten Alloy under by Low Temperature Irradiation under Local Deformation,” *IJMS*, vol. 24, no. 4, pp. 3289, 2023.
- [208] Sayed, M., Jefferson, J. H., Walker, A. B., & Cullis, A. G., “Computer simulation of atomic displacements in Si, GaAs, and AlAs,” *Nucl. Instrum. Methods Phys. Res., B.*, **102**(1-4), 232–235, 1995, Elsevier.
- [209] Schulz, H. J. and Kulp, B. A., “Electron Radiation Damage in Cadmium-Selenide Crystals at Liquid-Helium Temperature,” *Phys. Rev.*, vol. 159, no. 3, pp. 603–609, 1967.
- [210] Sharp, J. V. and Rumsby, D., “Electron irradiation damage in magnesium oxide,” *Radiat. Eff.*, vol. 17, no. 1-2, pp. 65–68, 1973.
- [211] Shirley, C. G. and Chaplin, R. L., “Evaluation of the threshold energy for atomic displacements in titanium,” *Phys. Rev. B*, vol. 5, no. 6, pp. 2027–2029, 1972.
- [212] Simeone, David and Costantini, Jean Marc and Luneville, Laurence and Desgranges, Lionel and Trocellier, Patrick and Garcia, Philippe, “Characterization of radiation damage in ceramics: Old challenge new issues?,” *J. Mater. Res.*, vol. 30, no. 9, pp. 1495–1515, 2015.
- [213] Simpson, H. M. and Chaplin, R. L., “Damage and recovery of aluminum for low-energy electron irradiations,” *Phys. Rev.*, vol. 185, no. 3, pp. 958–961, 1969.
- [214] Smith, Katherine L. and Cooper, Ronald and Colella, Michael and Vance, Eric R., “Measured displacement energies of oxygen ions in zirconolite and rutile,” *MRS Proc.*, vol. 663, pp. 373, 2000.
- [215] Smith, Katherine L. and Colella, Michael and Cooper, Ronald and Vance, Eric R., “Measured displacement energies of oxygen ions in titanates and zirconates,” *J. Nucl. Mater.*, vol. 321, no. 1, pp. 19–28, 2003.
- [216] Smith, Katherine L. and Zaluzec, Nestor J., “The displacement energies of cations in perovskite (CaTiO_3),” *J. Nucl. Mater.*, vol. 336, no. 2-3, pp. 261–266, 2005.
- [217] Sosin, A., “Energy dependence of electron damage in copper,” *Phys. Rev.*, vol. 126, no. 5, pp. 1698–1710, 1962.

- [218] Sosin, A. and Garr, K., “Directional Effects in Electron Irradiated Cu Single Crystals,” *Phys. Status Solidi (b)*, vol. 8, no. 2, pp. 481–485, 1965.
- [219] Soullard, J. and Alamo, Et A., “Etude du ralentissement des ions dans une cible diatomique: II—calcul du nombre d’atomes déplacés,” *Radiat. Eff.*, vol. 38, no. 3-4, pp. 133–139, 1978.
- [220] Soullard, J., “High voltage electron microscope observations of UO₂,” *J. Nucl. Mater.*, vol. 135, no. 2-3, pp. 190–196, 1985.
- [221] Steeds, J.W., ‘Orientation dependence of near-threshold damage production by electron irradiation of 4H SiC and diamond and outward migration of defects,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 269, no. 14, pp. 1702–1706, 2011.
- [222] Steffen, H. J. and Marton, D. and Rabalais, J. W., “Displacement energy threshold for Ne⁺ irradiation of graphite,” *Phys. Rev. Lett.*, vol. 68, no. 11, pp. 1726–1729, 1992.
- [223] Summers, G. P. and White, G. S. and Lee, K. H. and Crawford, J. H., “Radiation damage in MgAl₂O₄,” *Phys. Rev. B*, vol. 21, no. 6, pp. 2578–2584, 1980.
- [224] Tan, Shijie and Zhang, Wei and Jiao, Feng and Zhou, Yongchuan and Yang, Lu and Shi, Wenwu and Wang, Zhiguo, “First-Principles Molecular Dynamics Study of the Threshold Displacement Energy in LiFe₅O₈,” *Cryst. Res. Technol.*, vol. 56, no. 10, pp. 2100076, 2021.
- [225] Thomas, B.S. and Marks, N.A. and Corrales, L.R. and Devanathan, R., “Threshold displacement energies in rutile TiO₂: A molecular dynamics simulation study,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 239, no. 3, pp. 191–201, 2005.
- [226] Thomas, B.S. and Marks, N.A. and Begg, B.D., “Defects and threshold displacement energies in SrTiO₃ perovskite using atomistic computer simulations,” *Nucl. Instrum. Methods Phys. Res., B.*, vol. 254, no. 2, pp. 211–218, 2007.
- [227] Tikhonchev, M. Yu. and Svetukhin, V. V., “Threshold energies of atomic displacements in α -Fe under deformation: Molecular dynamics simulation,” *Tech. Phys. Lett.*, vol. 43, no. 4, pp. 348–350, 2017.
- [228] Torrens, Ian McC. and Chadderton, Lewis T. and Morgan, D. Vernon, “Ionic Displacement in the Alkali Halides,” *J. Appl. Phys.*, vol. 37, no. 6, pp. 2395–2398, 1966.
- [229] Torrens, Ian McC. and Chadderton, Lewis T., “Dynamics of Radiation Damage in Face-Centered-Cubic Alkali Halides,” *Phys. Rev.*, vol. 159, no. 3, pp. 671–682, 1967.

- [230] Tsuchihira, H. and Oda, T. and Tanaka, S., “Effects of threshold displacement energy on defect production by displacement cascades in α , β and γ -LiAlO₂,” *J. Nucl. Mater.*, vol. 442, no. 1-3, pp. S429–S432, 2013.
- [231] Tuttle, Blair R. and Karom, Nathaniel J. and O’Hara, Andrew and Schrimpf, Ronald D. and Pantelides, Sokrates T., “Atomic-displacement threshold energies and defect generation in irradiated β ,” *J. Appl. Phys.*, vol. 133, no. 1, pp. 015703, 2023.
- [232] Uhlmann, S. and Frauenheim, Th. and Boyd, K. J. and Marton, D. and Rabalais, J. W., “Elementary processes during low-energy self-bombardment of Si (100) 2×2 a molecular dynamics study,” *Radiat. Eff. Defects Solids*, vol. 141, no. 1-4, pp. 185–198, 1997.
- [233] Urban, K. and Seeger, A., “Radiation-induced diffusion of point-defects during low-temperature electron irradiation,” *Philos. Mag.*, vol. 30, no. 6, pp. 1395–1418, 1974.
- [234] Urban, K. and Yoshida, N., “The threshold energy for atom displacement in irradiated copper studied by high-voltage electron microscopy,” *Philos. Mag. A*, vol. 44, no. 5, pp. 1193–1212, 1981.
- [235] Vajda, P. and Biget, M., “Low-temperature fission neutron damage in vanadium and molybdenum,” *Phys. Stat. Sol. (a)*, vol. 23, no. 1, pp. 251–260, 1974.
- [236] Vajda, P and Biget, M and Lucasson, A and Lucasson, P, “On the problem of displacement threshold determination in irradiated metals: subthreshold effects and recovery spectrum,” *J. Phys. F: Met. Phys.*, vol. 7, no. 5, pp. L123–L126, 1977.
- [237] Vajda, P and Maury, F and Lucasson, P, “On the observation of a very low atomic displacement threshold energy in copper,” *Phys. Lett. A*, vol. 68, no. 1, 1978.
- [238] Van Brutzel, L. and Delaye, J.-M. and Ghaleb, D. and Rarivomanantsoa, M., “Molecular dynamics studies of displacement cascades in the uranium dioxide matrix,” *Philos. Mag.*, vol. 83, no. 36, pp. 4083–4101, 2003.
- [239] Vehse, W. E. and Sibley, W. A. and Keller, F. J. and Chen, Y., “Radiation damage in ZnO single crystals,” *Phys. Rev.*, vol. 167, no. 3, pp. 828–836, 1968.
- [240] Veiller, L., Crocombette, J.-P., & Ghaleb, D., “Molecular dynamics simulation of the α -recoil nucleus displacement cascade in zirconolite,” *J. Nucl. Mater.*, **306**, 1, 61–72, 2002, Elsevier.
- [241] Wang, Bao-Yi and Wang, Yue-Xia and Gu, Qiang and Wang, Tian-Min, “The threshold displacement and interstitial atom formation energy in TiAl alloy,” *Comput. Mater. Sci.*, vol. 8, no. 3, pp. 267–272, 1997.

- [242] Wang, X. J. and Xiao, H. Y. and Zu, X. T. and Zhang, Y. and Weber, W. J., “Ab initio molecular dynamics simulations of ion–solid interactions in Gd₂Zr₂O₇ and Gd₂Ti₂O₇,” *J. Mater. Chem. C*, vol. 1, no. 8, pp. 1665, 2013.
- [243] Wang, Bu and Yu, Yingtian and Pignatelli, Isabella and Sant, Gaurav and Bauchy, Mathieu, “Nature of radiation-induced defects in quartz,” *J. Chem. Phys.*, vol. 143, no. 2, pp. 024505, 2015.
- [244] Wang, Dong and Gao, Ning and Setyawan, W. and Kurtz, R. J. and Wang, Zhi-Guang and Gao, Xing and He, Wen-Hao and Pang, Li-Long, “Effect of strain field on threshold displacement energy of tungsten studied by molecular dynamics simulation,” *Chinese Phys. Lett.*, vol. 33, no. 9, pp. 096102, 2016.
- [245] Wang, D. and Gao, N. and Wang, Z.G. and Gao, X. and He, W.H. and Cui, M.H. and Pang, L.L. and Zhu, Y.B., “Effect of strain field on displacement cascade in tungsten studied by molecular dynamics simulation,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 384, pp. 68–75, 2016.
- [246] Wang, Pan and Perini, Christopher J. and O’Hara, Andrew and Gong, Huiqi and Wang, Pengfei and Zhang, En Xia and McCurdy, Michael W. and Fleetwood, Daniel M. and Schrimpf, Ronald D. and Pantelides, Sokrates T. and Vogel, Eric M., “Total Ionizing Dose Effects and Proton-Induced Displacement Damage on MoS₂-Interlayer-MoS₂ Tunneling Junctions,” *IEEE Trans. Nucl. Sci.*, vol. 66, no. 1, pp. 420–427, 2019.
- [247] Weber, W. J., Ewing, R. C., Catlow, C. R. A., De La Rubia, T. D., Hobbs, L. W., Kinoshita, C., Motta, A. T., Nastasi, M., Salje, E. K. H., Vance, E. R., et al., “Radiation effects in crystalline ceramics for the immobilization of high-level nuclear waste and plutonium,” *J. Mater. Res.*, **13**, 6, 1434–1484, 1998, Cambridge University Press.
- [248] Williford, R.E and Devanathan, R and Weber, W.J, “Computer simulation of displacement energies for several ceramic materials,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 141, no. 1-4, pp. 94–98, 1998.
- [249] Windl, Wolfgang and Lenosky, Thomas J and Kress, Joel D and Voter, Arthur F, “First-principles investigation of radiation induced defects in Si and SiC,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 141, no. 1-4, pp. 61–65, 1998.
- [250] Wolfenden, A., “Electron radiation damage near the threshold energy in aluminum,” *Radiat. Eff.*, vol. 14, no. 3-4, pp. 225–229, 1972.
- [251] Wollenberger, H. and Wurm, J., “Atomic displacement cross sections in copper for anisotropic threshold energy,” *Phys. Status Solidi (b)*, vol. 9, no. 2, pp. 601–609, 1965.

- [252] Wong, J. and De La Rubia, T. Diaz and Guinan, M.W. and Tobin, M. and Perlado, J.M. and Perez, A.S. and Sanz, J., “The threshold energy for defect production in SiC: a molecular dynamics study,” *J. Nucl. Mater.*, vol. 212-215, pp. 143–147, 1994.
- [253] Wooding, S. J. and Bacon, D. J., “Computer simulation of low-energy displacement events in pure HCP metals,” *Radiat. Eff. Defects Solids*, vol. null, no. 1, pp. 461–469, 1994.
- [254] Wu, W. and Fahy, S., “Molecular-dynamics study of single-atom radiation damage in diamond,” *Phys. Rev. B*, vol. 49, no. 5, pp. 3030–3035, 1994.
- [255] Xi, Jianqi and Liu, Bin and Zhang, Yanwen and Weber, William J., “Ab initio molecular dynamics simulations of AlN responding to low energy particle radiation,” *J. Appl. Phys.*, vol. 123, no. 4, pp. 045904, 2018.
- [256] Xiao, H. Y. and Gao, Fei and Zu, X. T. and Weber, W. J., “Threshold displacement energy in GaN: Ab initio molecular dynamics study,” *J. Appl. Phys.*, vol. 105, no. 12, pp. 123527, 2009.
- [257] Xiao, H Y and Gao, F and Weber, W J, “Threshold displacement energies and defect formation energies in Y2Ti2O7,” *J. Phys.: Condens. Matter*, vol. 22, no. 41, pp. 415801, 2010.
- [258] Xiao, H. Y. and Zhang, Y. and Weber, W. J., “Ab initio molecular dynamics simulations of low-energy recoil events in ThO₂, CeO₂, and ZrO₂,” *Phys. Rev. B*, vol. 86, no. 5, pp. 054109, 2012.
- [259] Yang, Wei and Chen, Piheng and Lai, Wensheng and Zhang, Zhengjun, “Molecular dynamics simulations of displacement cascade and threshold energy in ordered alloy Al₃U,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 449, pp. 22–28, 2019.
- [260] Yang, Qigui and Olsson, Pär, “Full energy range primary radiation damage model,” *Phys. Rev. Materials*, vol. 5, no. 7, pp. 073602, 2021.
- [261] Yasunaga, K. and Yasuda, K. and Matsumura, S. and Sonoda, T., “Electron energy-dependent formation of dislocation loops in CeO₂,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 266, no. 12-13, pp. 2877–2881, 2008.
- [262] Yoshida, N. and Urban, K., “Direct evidence for a very low atom displacement threshold energy around the $\langle 110 \rangle$ directions in copper,” *Phys. Lett. A*, vol. 63, no. 3, pp. 381–383, 1977.
- [263] Yoshida, N. and Urban, K., “An investigation of the temperature dependence of the threshold energy for atom displacement in electron-irradiated copper,” *Phys. Lett. A*, vol. 75, no. 3, pp. 231–233, 1980.
- [264] Yoshiie, T. and Iwanaga, H. and Shibata, N. and Ichihara, M. and Takeuchi, S., “Orientation dependence of electron-irradiation damage in zinc oxide,” *Philos. Mag. A*, vol. 40, no. 2, pp. 297–301, 1979.

- [265] Youngblood, G. and Myhra, S. and DeFord, J. W., “Measurements of the threshold displacement energy in Ta and Nb,” *Phys. Rev.*, vol. 188, no. 3, pp. 1101–1107, 1969.
- [266] Youngman, R. A. and Hobbs, L. W. and Mitchell, T. E., “RADIATION DAMAGE IN OXIDES Electron irradiation damage in MgO,” *J. Phys. Colloques*, vol. 41, no. C6, pp. C6–227–C6–231, 1980.
- [267] Yuan, Y. G. and Jiang, M. and Zhao, F. A. and Chen, H. and Gao, H. and Xiao, H. Y. and Xiang, X. and Zu, X. T., “Ab initio molecular dynamics simulation of low energy radiation responses of α -Al₂O₃,” *Sci Rep*, vol. 7, no. 1, pp. 3621, 2017.
- [268] Zag, W. and Urban, K., “Temperature dependence of the threshold energy for atom displacement in irradiated molybdenum,” *Phys. Stat. Sol. (a)*, vol. 76, no. 1, pp. 285–295, 1983.
- [269] Zepeda-Ruiz, L. A. and Han, S. and Srolovitz, D. J. and Car, R. and Wirth, B. D., “Molecular dynamics study of the threshold displacement energy in vanadium,” *Phys. Rev. B*, vol. 67, no. 13, pp. 134114, 2003.
- [270] Zhang, X. Y. and Sprengel, W. and Blaurock, K. and Rempel, A. A. and Reichle, K. J. and Reimann, K. and Inui, H. and Schaefer, H.-E., “Vacancies selectively induced and specifically detected on the two sublattices of the intermetallic compound MoSi₂,” *Phys. Rev. B*, vol. 66, no. 14, pp. 144105, 2002.
- [271] Zhang, Chao and Mao, Fei and Zhang, Feng-Shou and Zhang, Yanwen, “Impact energy dependence of defect formation in single-walled carbon nanotubes,” *Chemical Phys. Lett.*, vol. 541, pp. 92–95, 2012.
- [272] Zheng, Ming-Jie and Szlufarska, Izabela and Morgan, Dane, “Ab initio prediction of threshold displacement energies in ZrC,” *J. Nucl. Mater.*, vol. 471, pp. 214–219, 2016.
- [273] Zhu, Huilong and Lam, Nghi Q., “Displacement cascades in the ordered compound CuTi studied by molecular-dynamics simulations,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 95, no. 1, pp. 25–33, 1995.
- [274] Zinkle, S. J., & Kinoshita, C., “Defect production in ceramics,” *J. Nucl. Mater.*, **251**, 200–217, 1997, Elsevier.
- [275] Zobelli, A. and Gloter, A. and Ewels, C. P. and Seifert, G. and Colliex, C., “Electron knock-on cross section of carbon and boron nitride nanotubes,” *Phys. Rev. B*, vol. 75, no. 24, pp. 245402, 2007.
- [276] Zolnikov, K.P. and Korchuganov, A.V. and Kryzhevich, D.S. and Chernov, V.M. and Psakhie, S.G., “Structural changes in elastically stressed crystallites under irradiation,” *Nucl. Instrum. Methods Phys. Res., B*, vol. 352, pp. 43–46, 2015.