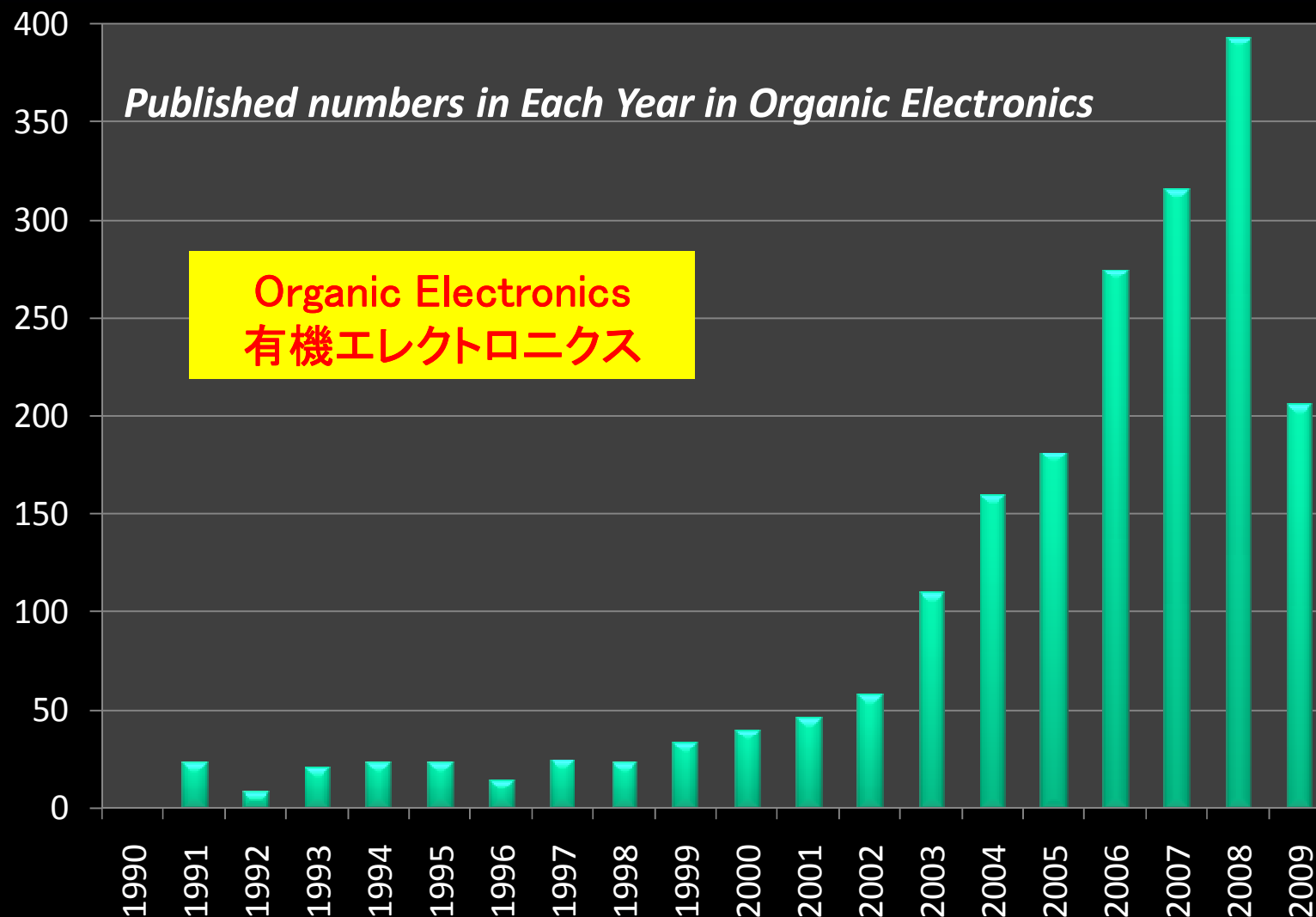


有機ナノ構造体の創製

—有機半導体の飛躍的な性能向上を目指して—

LifeBEANS Center 九州/九州大学未来化学創造センター 安達千波矢

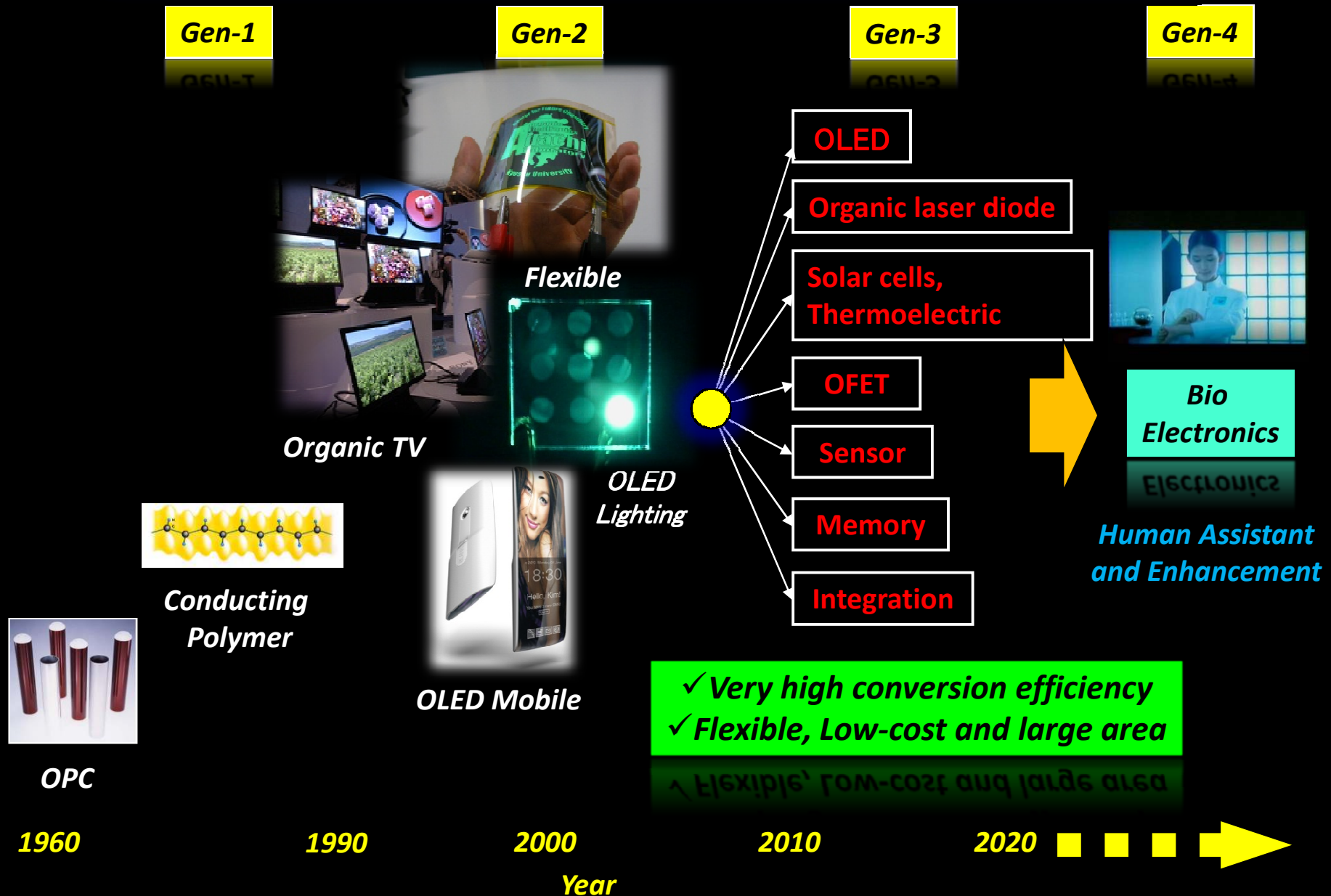


Research Papers in OLED



Topic=(**organic light emitting diode**) OR Topic=(**organic electroluminescence**) AND
Address=(country)

Research in Organic Electronics



有機エレクトロニクスが切り拓く新しいlifestyle



第1世代

無機+有機デバイス

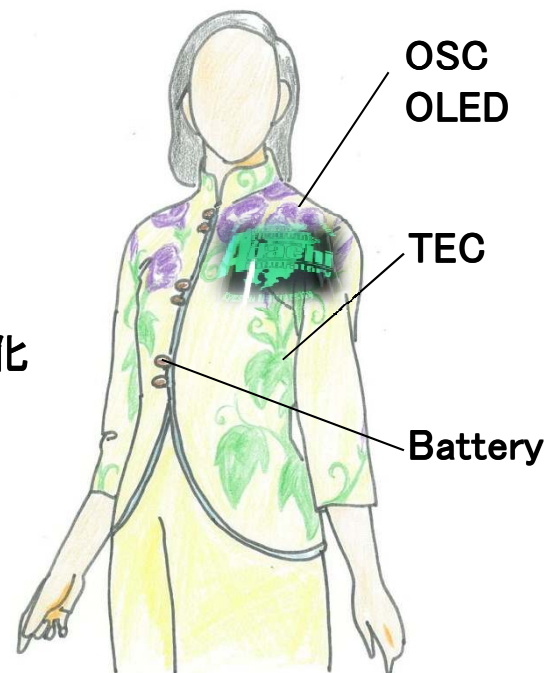
OSC
OLED
TEC
Battery



第2世代

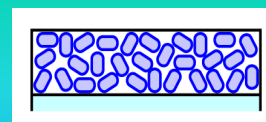
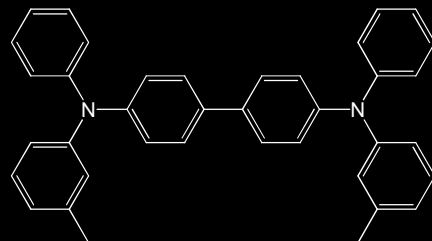
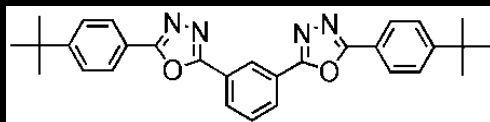
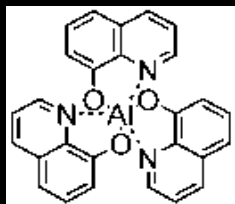
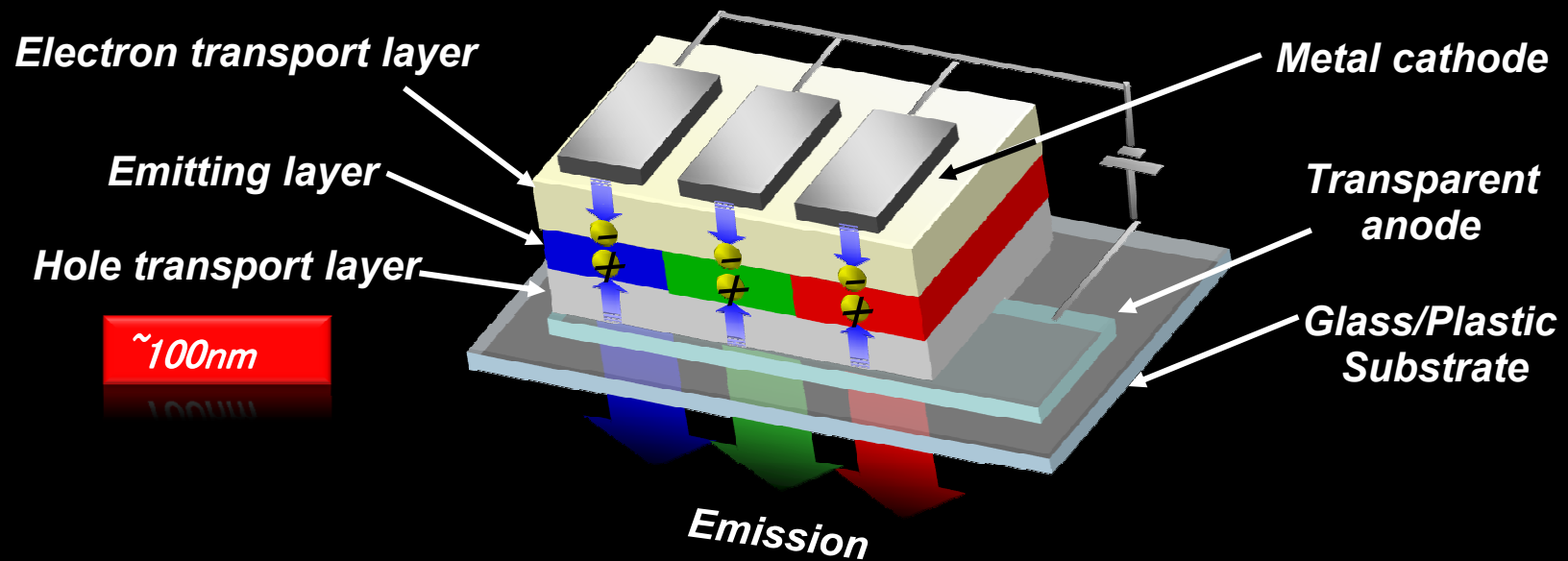
有機+ナノ構造デバイス

高変換効率化
超小型化



第3世代

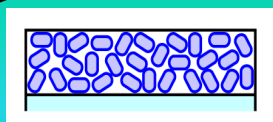
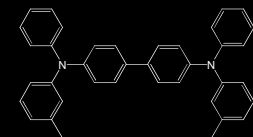
アモルファスからの脱却へ



**Amorphous
morphology**

100nm程度の薄膜における
極めて優れた成膜性

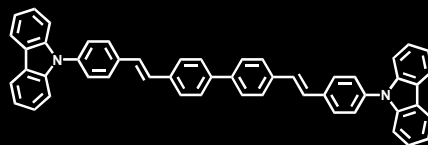
分子の高次構造制御



TPD

アモルファス

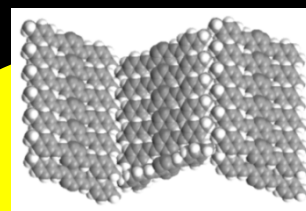
100nm程度の薄膜における
極めて優れた成膜性



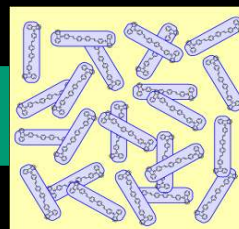
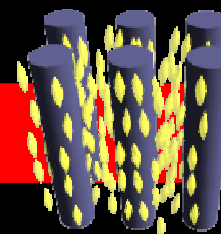
BSB-Cz

アモルファス中における
分子配向

光取り出し効率の向上
移動度の向上



有機単結晶へ
電気特性の飛躍的な向上



デバイスの高性能化

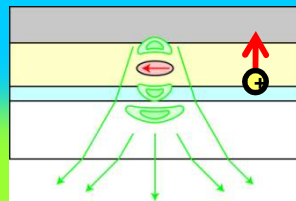
Low-cost, large area and high optoelectronic performance -Control of 100nm sized nano-structures-

Future

① High performance organic Display devices



OLEDs

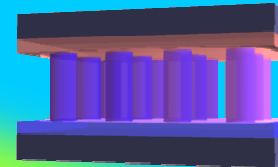


Light out-coupling



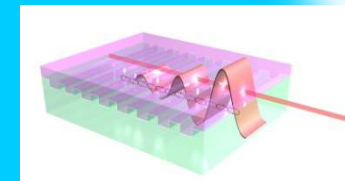
Flexible device

② Organic Solar Cells



Thermoelectric and light Harvesting devices

③ Photonics Devices

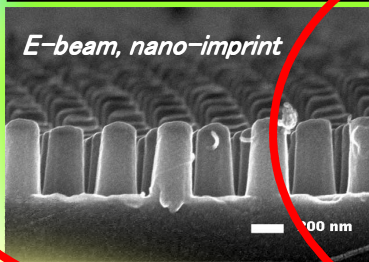


Organic laser

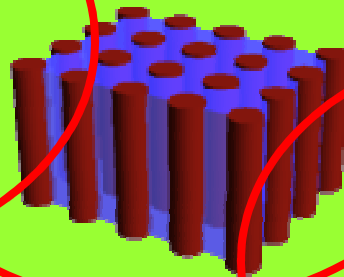
Present

① Top-down Fabrication

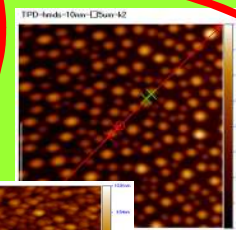
E-beam, nano-imprint



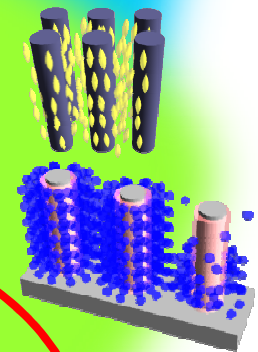
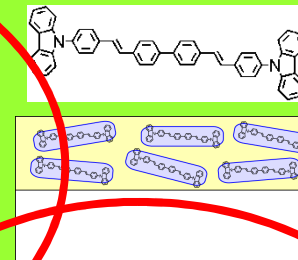
② Block copolymers



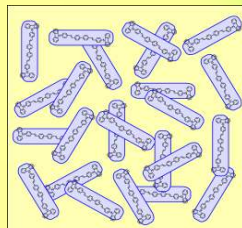
③ Nano-dot formation



④ Molecular orientation



Past



Amazing film forming capability

⑤ Nano-mist technology

